251

Panzer Colors

Camouflage of the German
Panzer Forces 1939-45

squadron/signal publications

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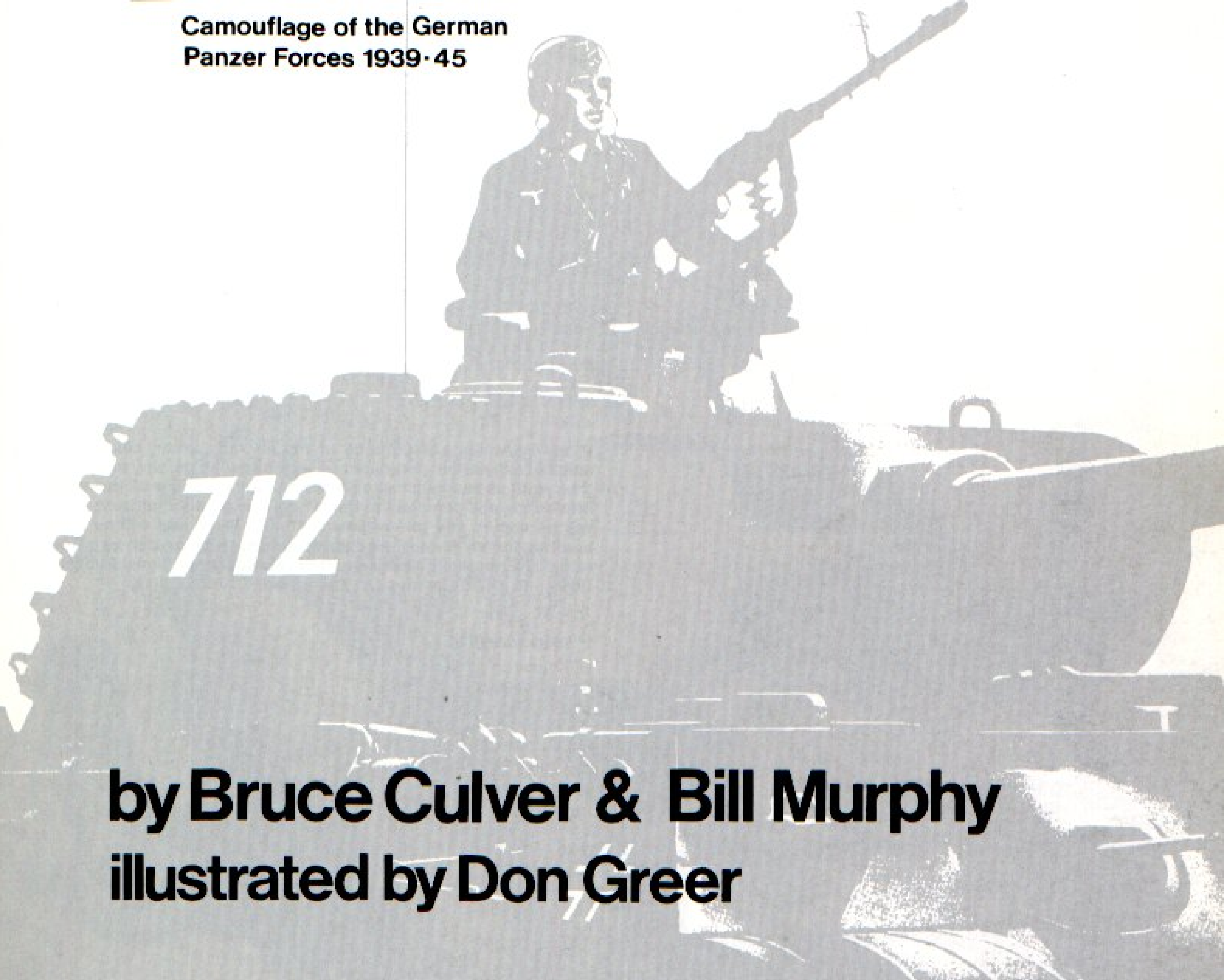
Panzer Forces 1939-45

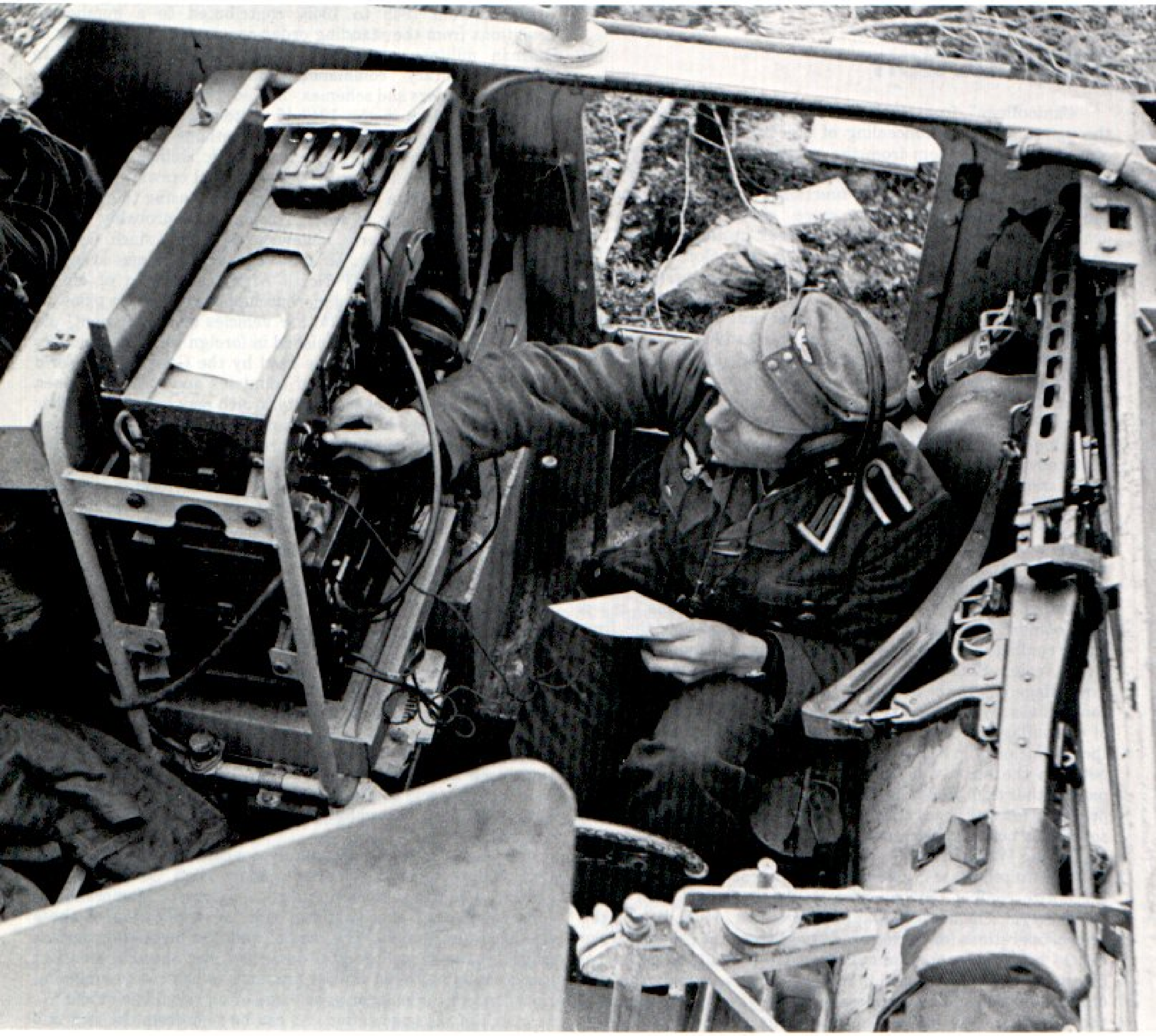


by Bruce Culver & Bill Murphy
illustrated by Don Greer

squadron/signal publications

This early production SdKfz 222 light armored car is seen in Libya in early 1941. The original dark gray paint has been covered with a solid layer of mud, which has dried to a light yellow. Note the dark gray paint showing through at the top of the turret - the mud tended to wear away quickly. The interior was not colored with the mud. [Bundesarchiv]

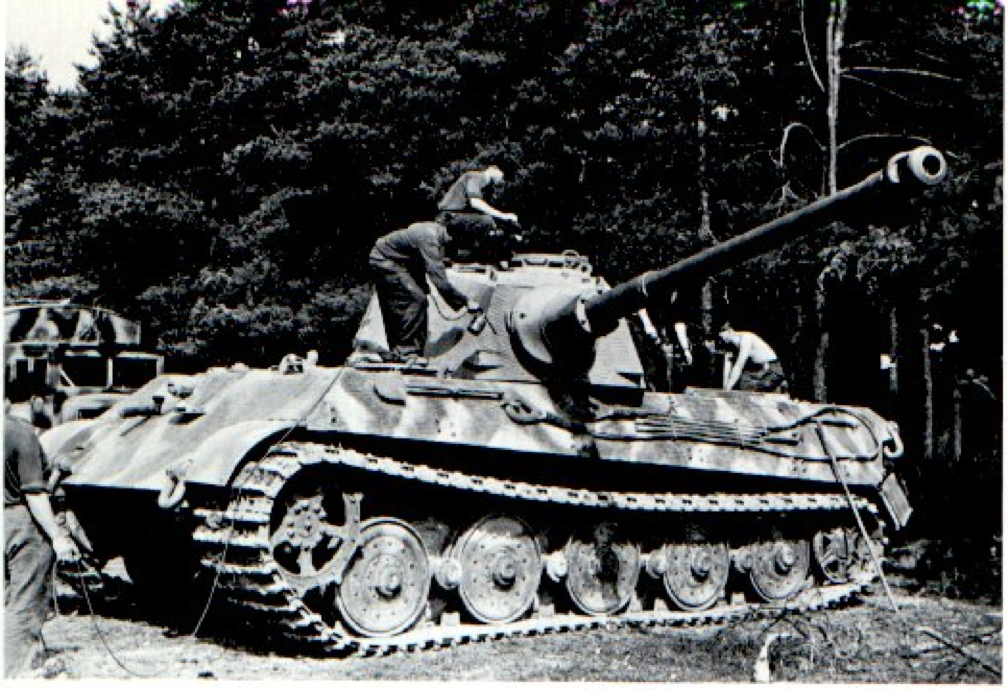
This late production SdKfz 250/3 radio halftrack shows the use of the dark yellow exterior color as the basic interior color. Most of the interior details and brackets are also painted in the base color. Stencilled labels are black. The radio sets and support racks are painted field gray and black. [Bundesarchiv]

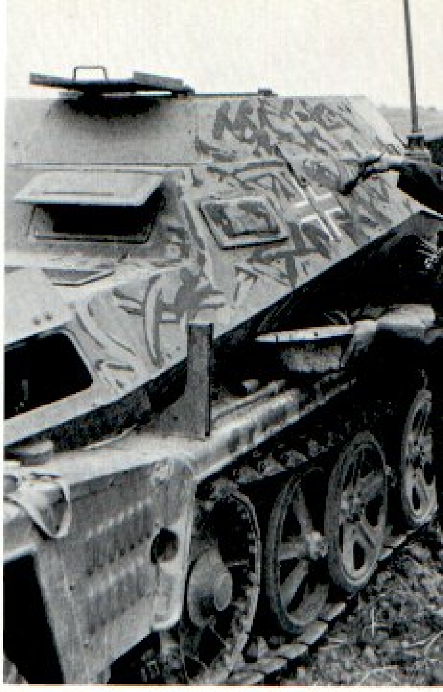


Interior Colors

Interior colors of German vehicles varied, depending on the type of vehicle. Closed vehicles (tanks, assault guns, etc.) used a standard light buff tan interior base color. All hatches or doors that opened outward were usually painted in the exterior color of the vehicle so they would match the color scheme when left open. Occasionally, hatch interiors were painted in the interior buff, but this was not common.

Open vehicles (self-propelled artillery, personnel carriers, etc.) usually had the interior painted in the exterior base color. Thus open interiors ranged from "dark gray", to "yellow-brown" and "brown" in the desert, to "dark yellow" in early 1943. Often, vehicles being repainted in a new color scheme did not have the interiors repainted. This was done to save time and materials. It was common to find "yellow-brown" vehicles in Africa, 1941, with "dark gray" open interiors, and similiar left over interiors were common during the big change from "dark gray" to "dark yellow" in early 1943.





Method of Application

Many of the variations in colors and patterns on World War II German vehicles were caused by variations in the paints (almost unavoidable in wartime), and, to a much greater extent, differences in the way the paints were applied.

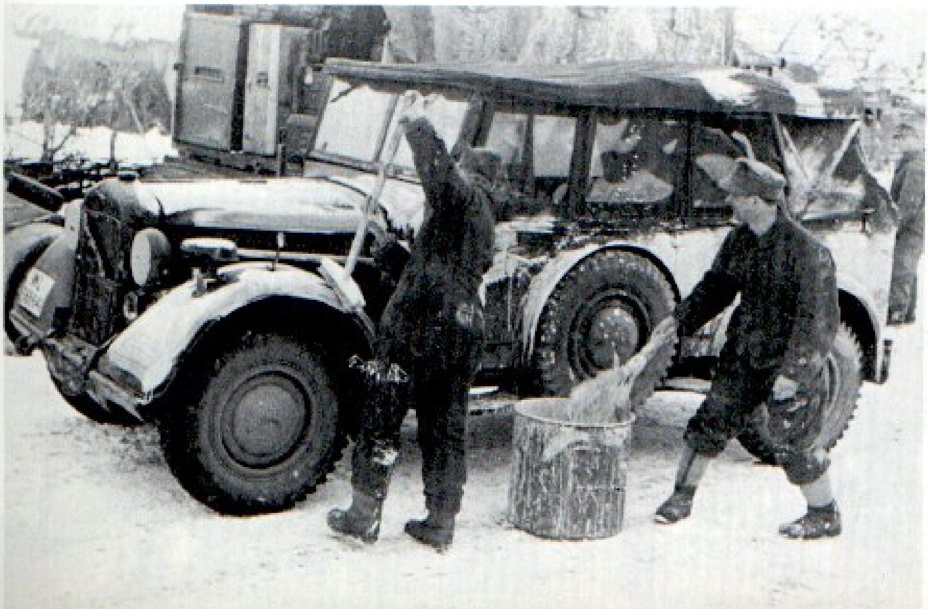
The normal (ideal) method of applying virtually all paint was by using a standard spray gun. Most tanks and heavy vehicles even had engine-driven compressors to provide the needed air pressure for painting. In most situations, individual vehicle crews were responsible for painting their equipment. While in some newly formed (or elite) units, the commanding officer would order a "standard" pattern of colors (if more than one shade was in use), this was not common, and in most German formations, there were vast differences in the patterns of vehicles, even within a single company or platoon.

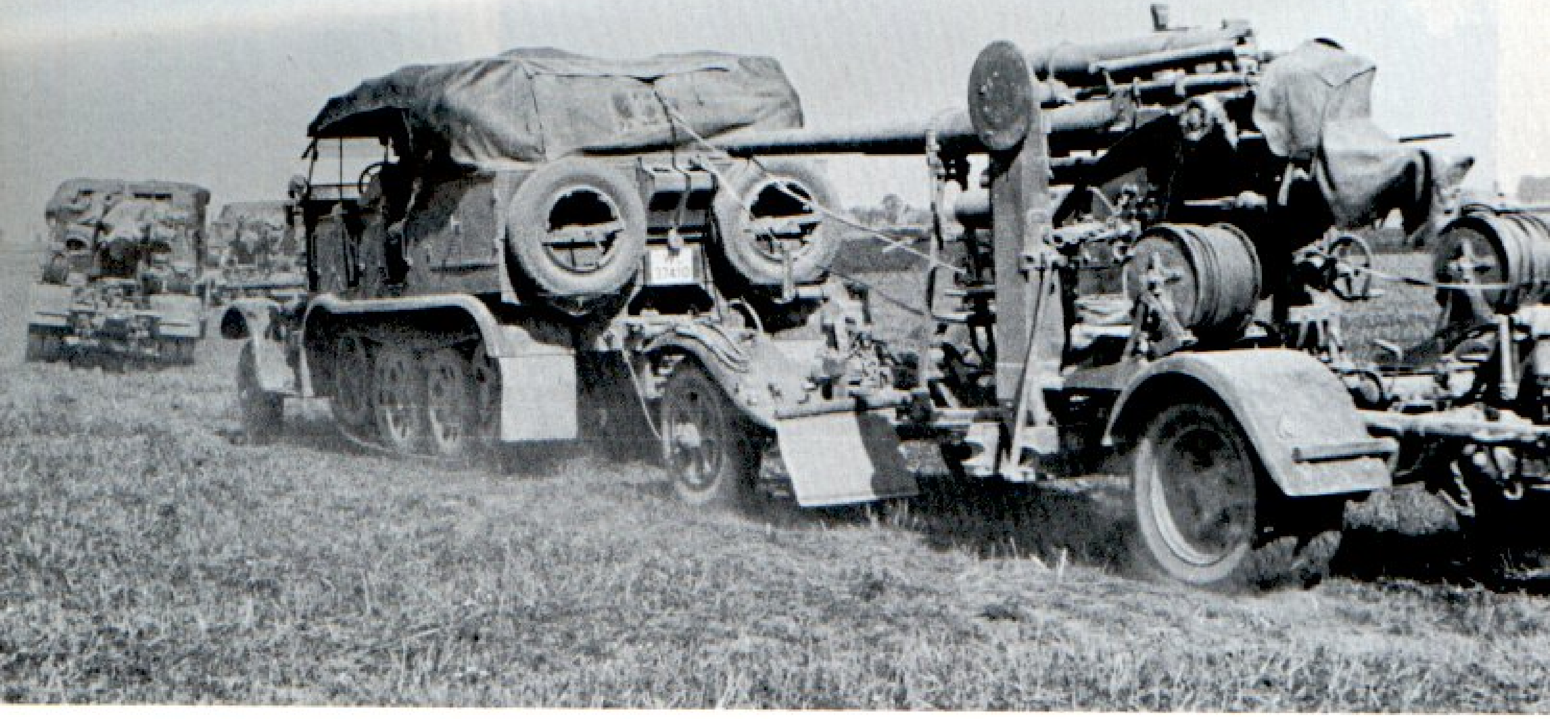
Even using the standard spray gun (which was by far the most common method of application), individuals displayed remarkable variations in patterns, coverage, and color density. In the 1943-45 three-color system, the two additional colors, olive green and red brown, were infinitely variable in color, depending on the dilution and type of solvent.

In a number of situations, use of the spray gun was not practical - this was very common in winter when snow camouflage had to be applied, often with extreme haste. Almost every possible way to apply paint was used - sponges, brooms, mops, rags, hands, even the extreme of throwing buckets of paint or whitewash (for winter) onto the vehicle and quickly smearing it around with whatever could be used.

Thus, it is very difficult to make hard general rules or statements about German colors, patterns, or applications. With few exceptions - and these were usually the result of local orders - there were no special colors and patterns applicable only to one campaign or battle. Except for Africa, all vehicles were supposed to use the same colors - from Finland and Leningrad in the North to Greece and the Balkans in the South. There were local deviations to these orders, brought about by the obvious inadequacy of one color for so many areas of climate and topography, but the important point is that officially there were no "Italian" or "Russian" or "French" area color schemes or patterns. Vehicles with the same overall gray could be found anywhere; later, equipment in the three-color scheme could be found in Russia, Italy, France - anywhere - in virtually identical patterns and colors, the variations limited only by the skills of the crews and the availability of paint. Fuel shortages, as detailed later, brought additional problems.

The best guides for patterns and methods of application are the dozens of photographs shown in this book, which illustrate the development of German camouflage and the various methods by which it was applied.





This early production SdKfz 7 tractor and 8.8 cm Flak 18 gun show the effects of a heavy layer of dust on the dark gray base color. Often it was difficult to tell what the original color was. In this case, the dust has covered even the folding top tarpaulin.

Weathering

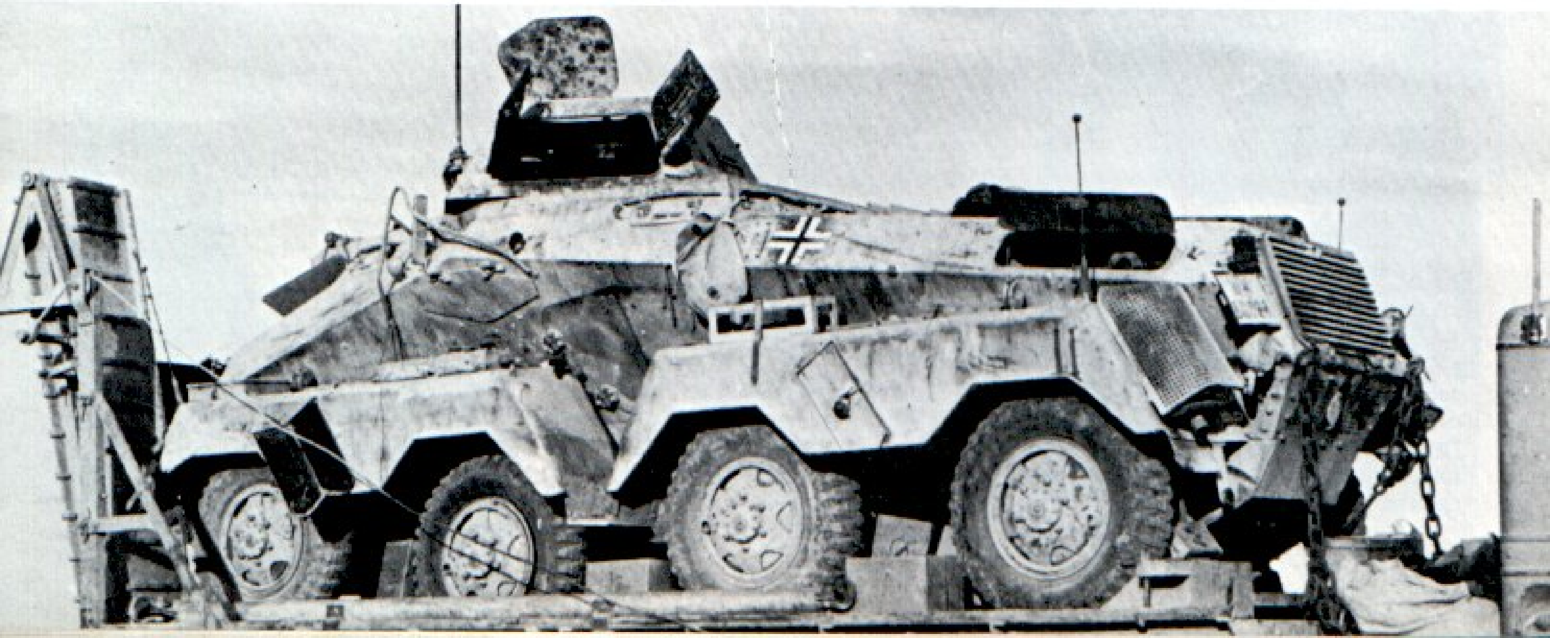
A short note should be made of the effect of weathering - the alteration of the original paint and camouflage by deterioration of the finish, or by being covered with mud, dust, or debris from the local area.

All paint tends to deteriorate in time, affected by heat, cold, moisture, even radiation from the sun. In southern climates, especially Africa, the destructive effects of heat and sun damaged paint very quickly, causing bleaching, chalking, blistering, and cracking. Northern climates occasionally caused blistering and peeling caused by excessive cold and condensation, but paint lasted much longer than in the south.

The effects of mud and dust were more obvious and usually happened fairly quickly. Among the photographs will be found vehicles in dark gray, ranging from very clean, obviously dark gray pieces, to equipment so completely covered with dust and/or mud that the true color is nearly impossible to determine. Occasionally the only tell-tale clues to the original color consist of small dark smudges along edges of fenders - and handprints on doors!

In North Africa, mud was commonly used to cover the dark gray paint until there was time to repaint the vehicles properly, and the use of mud as a secondary camouflage "color" over the base coat was common on most fronts, especially in Russia. In built up areas, it was not uncommon for crews to use rubble and parts of buildings to help disguise their vehicles if this could be done without fouling turret traverse, gun movement, etc.

This captured SdKfz 231 [8 rad] armored car, although damaged by an internal fire, shows a badly deteriorated coat of camouflage paint. Note the stains from oil and grease, and the chalky appearance of the paint coating.



German Camouflage in World War II: Introduction

1918-1934

German camouflage colors in World War I seem - on the basis of presently available evidence - to have been: sand, gray, green, and brown. The latter three colors were officially standardized by July 1918, and use of yellow ochre or sand color has been found on items of German equipment used during this time. Early patterns of coloring usually involved one overall color, most commonly gray. Later in the war variegated patterns and mottling were employed in an effort to break up the distinctive shapes of the pieces of equipment. These multi-colored patterns were applied to many types of equipment, from trucks and tanks down to helmets and machine guns, though not all the materiel was so painted.

The A7V tank was usually painted in a multi-toned scheme, the most common of which consisted of a sand or gray base color with mottled or patchy overpainting in dark green and dark brown. The A7V at Aberdeen Proving Ground had traces of all four colors on it, but whether this was a standard pattern cannot be determined. Nonetheless, the majority of these vehicles carried a two- or three-toned scheme.

After the end of World War I, Germany was disarmed and forced to pay heavy reparations. One result of this was that for several years, the wartime colors and patterns of painting were continued on German vehicles, because of limited funds. In 1922 new standards for painting vehicles were issued, retaining the wartime gray, green, and brown for combat type vehicles, and using largely dove-gray and field-gray for other vehicles, generally with the chassis and mudguards painted in black lacquer. Briefly, the Reichswehr used the following colors:

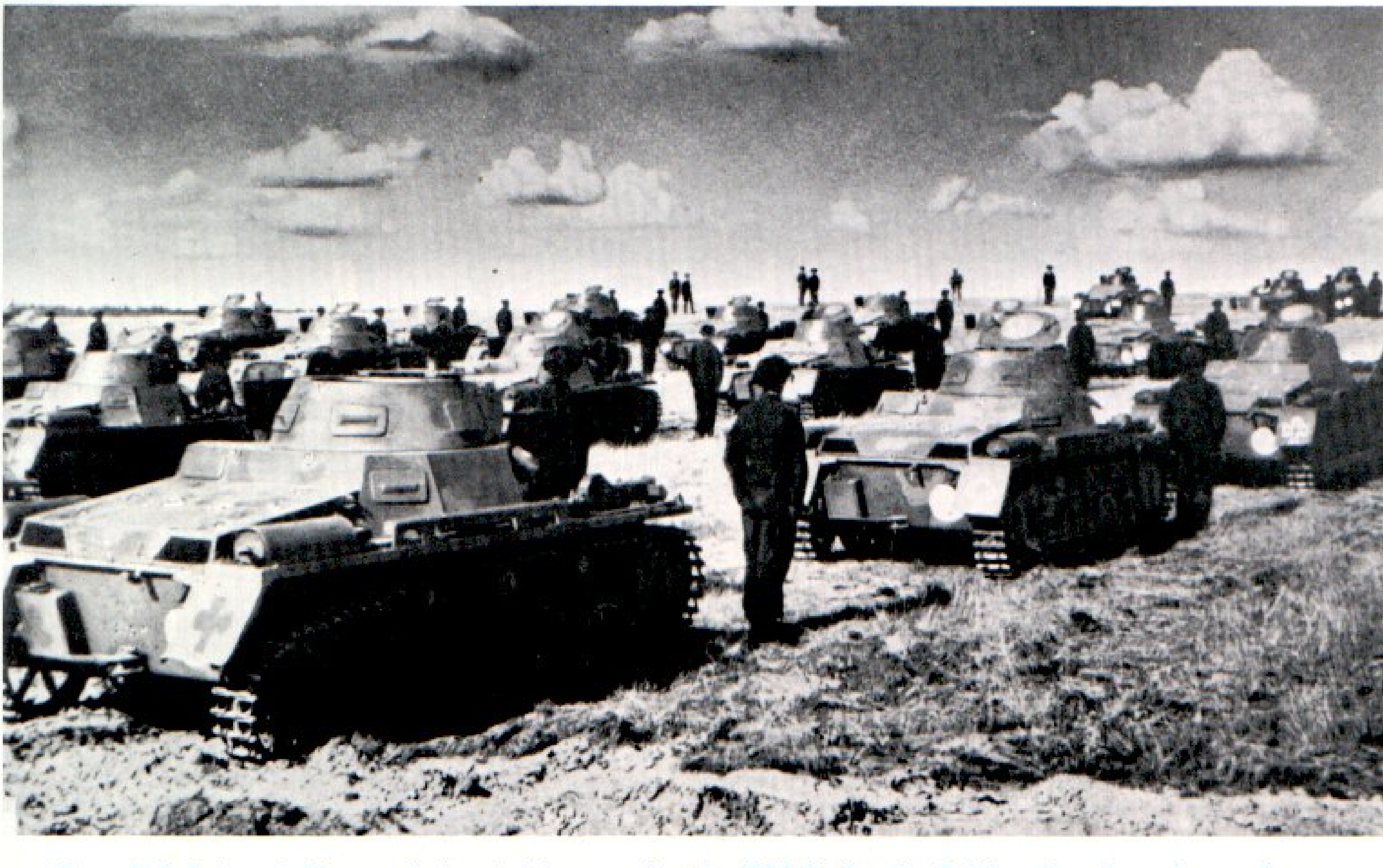
Ambulances, trailers, buses: Dove-gray lacquer (gloss) on bodies, black (matte) on chassis components, wheels and mudguards (the latter were gloss on buses).

Trucks, truck trailers (including field kitchens and fuel trailers), and motorcycles: Field-gray matte paint on bodies, matte black paint on chassis parts, wheels, and mudguards.

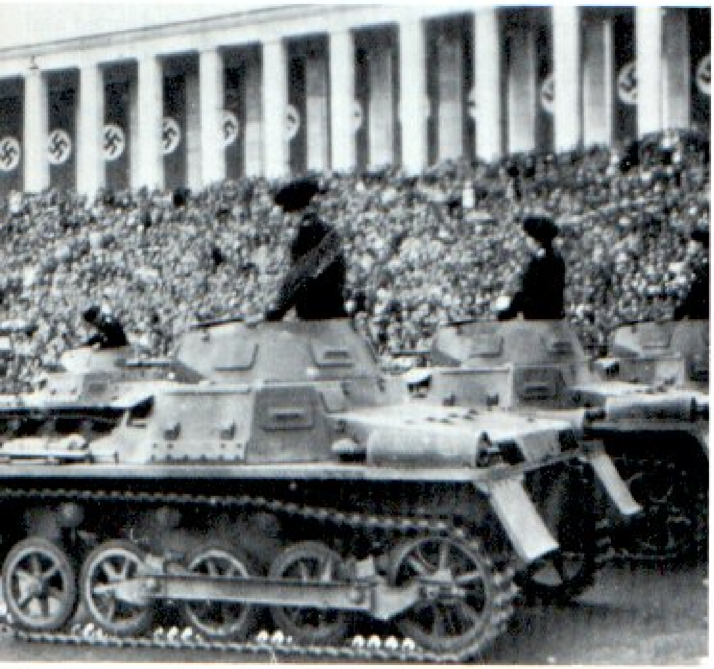
Personnel carriers and light trucks (touring cars, etc.): Black lacquer (gloss) on chassis, wheels, and mudguards, with bodies painted dark green, dark blue, dark gray or dark brown lacquer (gloss) as for commercial vehicles.

Tractors, artillery tractors, special military vehicles, armored cars and vehicles: Three-tone camouflage of dark gray, dark green, and dark brown on all chassis and body components, matte paints.

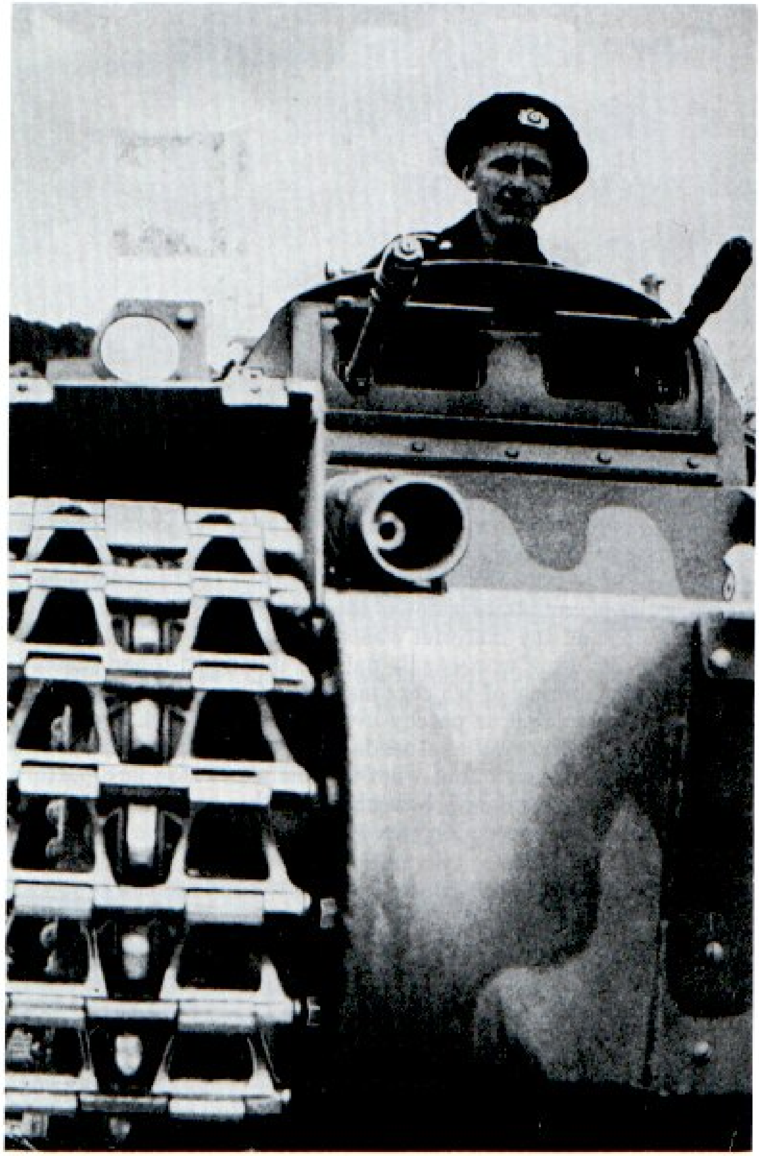
Because of deteriorating financial conditions, this system was not universally applied during the later years of the Reichswehr's existence, but the standard was in effect up until Hitler's rise to power. With the formation of the Wehrmacht under Hitler's Third Reich, changes were made in the colors applied to German military vehicles and equipment.



These PzKpfw I ausf A's seen during training exercises in 1934 display the Reichswehr color scheme of gray, green and brown. Note the use of playing card symbols and circles.



PzKpfw I ausf A's at a Nazi rally in 1934, showing the use of the Reichswehr colors in 3-color sprayed "cloud effect" schemes. The lead tank has a pennant.



A rare photo of the front of a PzKpfw I in the old Reichswehr scheme, 1933. The lighter areas are the gray base color; the darker areas are the earth brown shade. Only two colors have been used.

Pre-War Period 1935-1939

In 1935, the new Wehrmacht standardized a new basic scheme for all large items of military equipment, including all vehicles and large weapons. The colors were dark gray and dark brown, and the proportion of color to be used was ⅔ gray to ⅓ brown, covering the vehicles and equipment in random patterns, usually applied as a "cloud" effect or in large patches. These colors, darker than the old shades, were chosen because in the field, vehicles and large pieces of equipment were parked under trees or in the shades of buildings in villages so as to conceal them. Thus, the dark colors blended well with the shadows. Smaller items of equipment were painted field-gray, which was also the color for personal gear (radios, telescopes, gas mask containers, helmets, etc.).

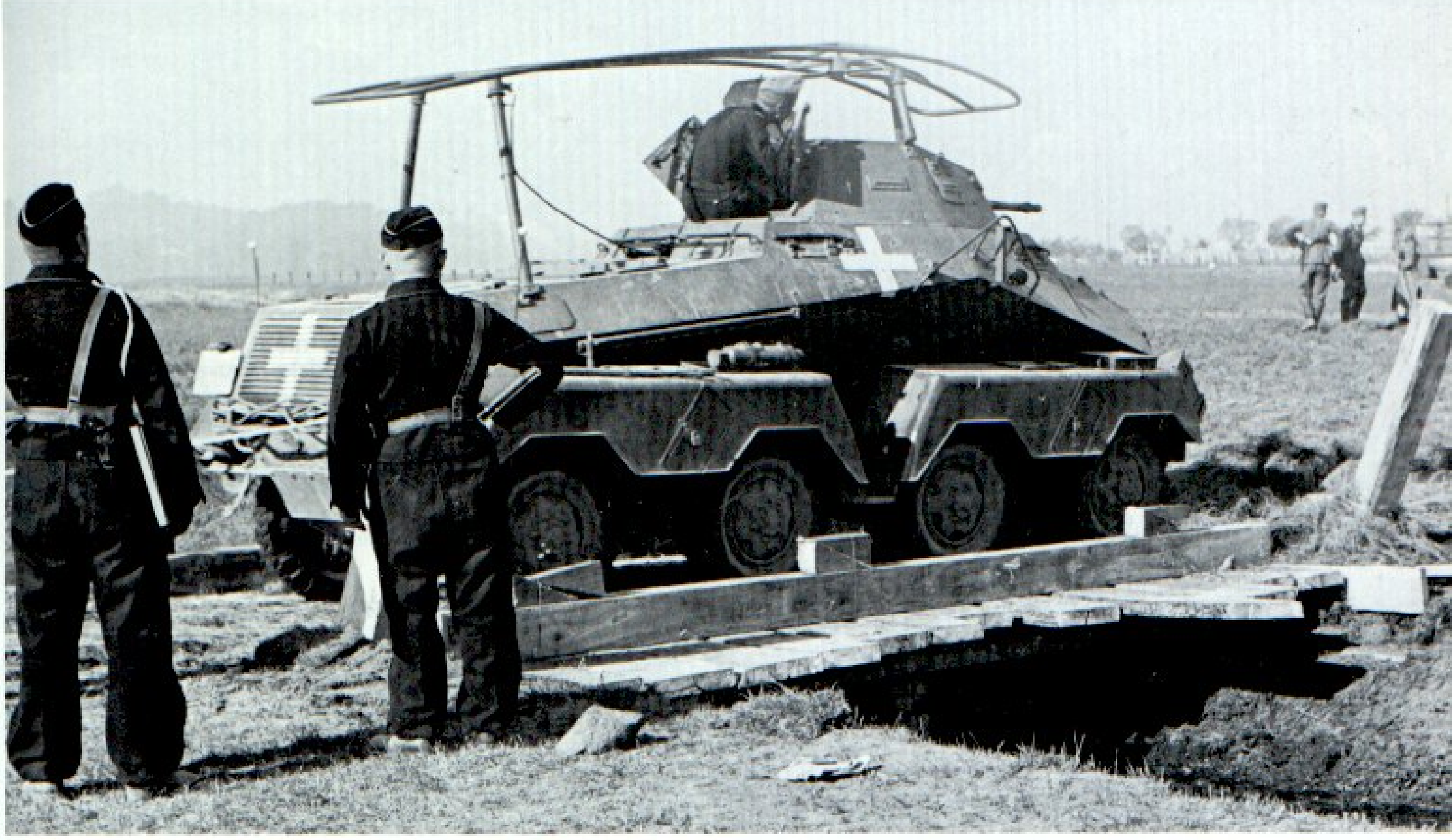
The dark-gray/dark-brown combination was considered relatively satisfactory in service. It was found that dust and dirt very quickly lightened the gray areas, and helped the vehicles blend into the local terrain better. Many photos of dark gray vehicles from the French and early Russian campaigns show such heavy layers of dust and mud that the base color of dark gray is completely hidden. Since the dust and mud matched the local terrain, the covered camouflage schemes were often very effective - much more than the paints themselves.

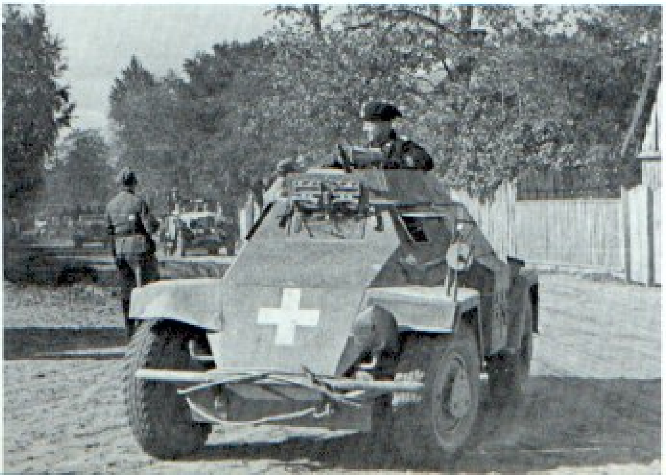
Late in 1939, a new specification was promulgated, changing the official vehicle color scheme. In order to save supplies of paint, vehicles and equipment - previously painted dark gray and dark brown - were to be painted in overall dark gray. It is probable that this order was not completely carried out before the invasion of Poland on 1 September 1939. After the Polish campaign had ended, the winter of 1939/1940 was spent in repairing damaged vehicles, bringing the new Panzer Divisions up to strength and replacing many obsolete tanks and vehicles with more advanced types. By the Spring of 1940, most vehicles were painted in the single color dark gray. HM 1940, no. 864, dated July 31, 1940 standardized this order for all vehicles and heavy equipment.

Early War Period 1939-1940

The Campaign in France and the Low Countries was fought by German vehicles painted overall dark gray, including the PzKpfw 35(t) and PzKpfw 38(t) tanks with which several of the Panzer Divisions were equipped. With the capture of thousands of French and British vehicles, the Germans were able to add substantially to their own stocks of tanks and transport vehicles. Many of the trucks and automobiles captured in France in 1940 were still in use five years later, at the end of the European war.

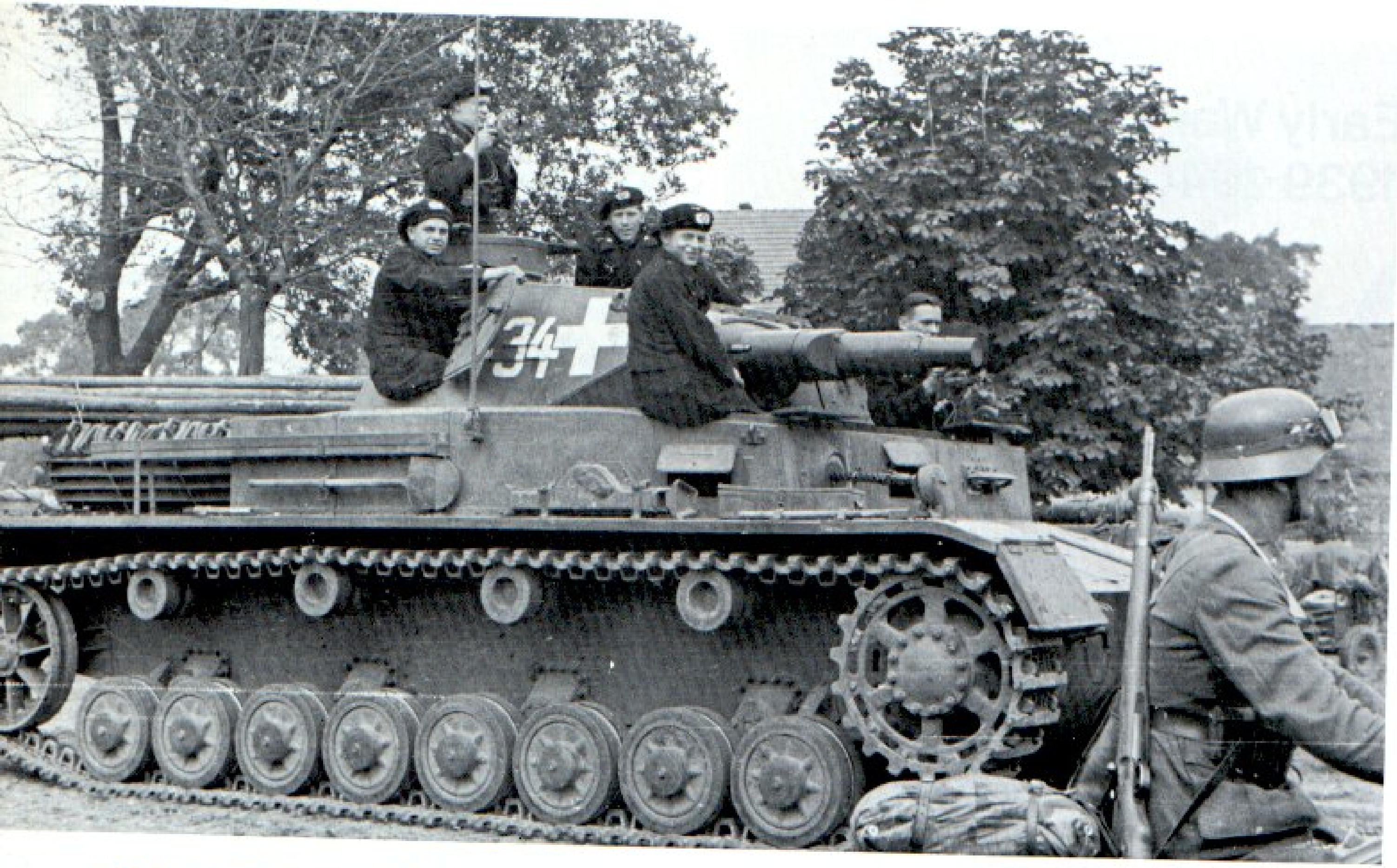
It is probable that for many months, these vehicles were used in their original French and British colors. Eventually, however, the Germans began to integrate these trucks into Wehrmacht use, and as the vehicles were modified for German use (being fitted with the Notek light system, etc.), they were repainted in dark gray. British and French vehicles were, at this point, used primarily in occupied France because of the better availability of spares. The hundreds of captured tanks and armored vehicles were also adapted for use by the forces of occupation. Many of the French tanks (H35, R35, Somua, Char B) were modified for German use, many having new tool stowage, new radio mounts and aerials, modified cupolas, etc., and these vehicles were generally repainted. The color was probably dark gray, but it is possible that French greens or grays were used also. It has not been possible to determine how much use was made of French paint manufacturers to produce colors to German standards. It is known that in Czechoslovakia, paint to prewar Czech specifications was still being used in 1944, appearing on some Czech-built vehicles made for the German Wehrmacht. Captured vehicles used for training or experimental purposes were not always repainted.





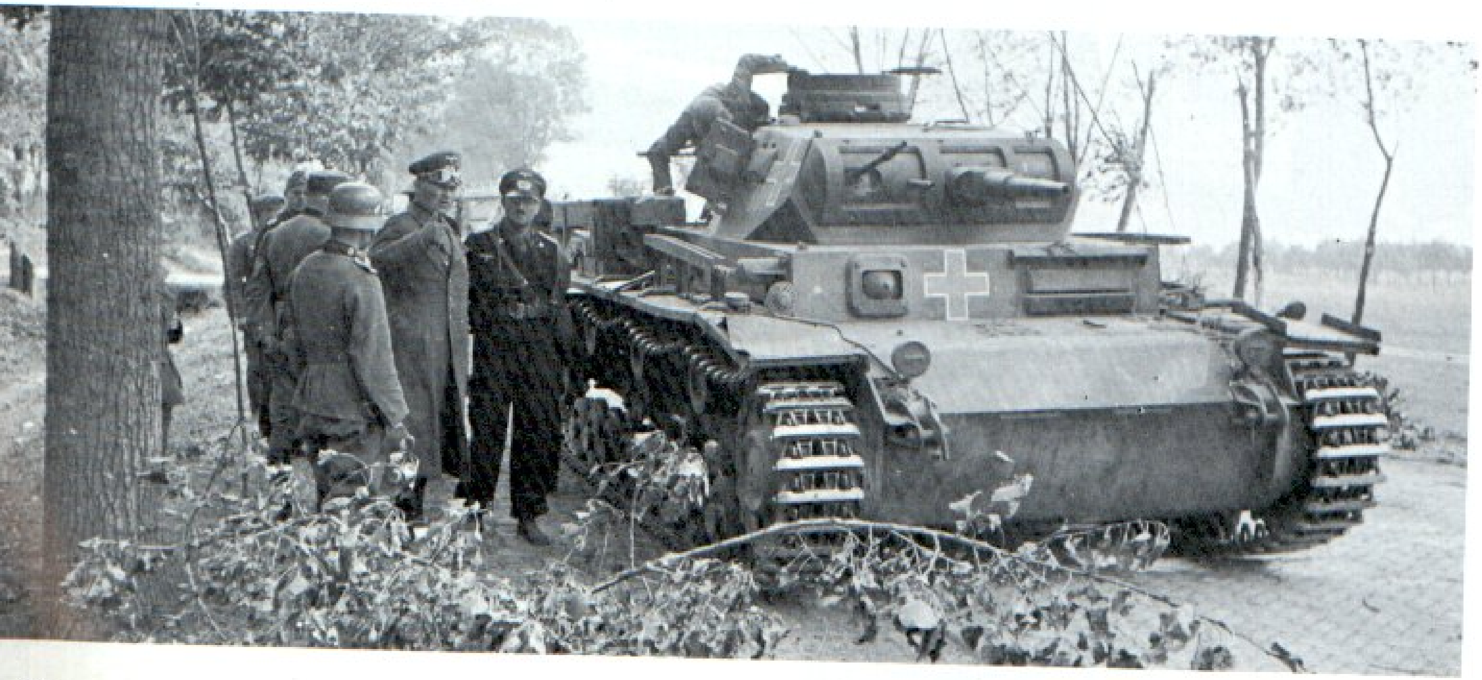
A SdKfz 232 [8 rad] radio armored car crosses a wooden bridge in Poland, 1939. Dust is noticeable on the upper surfaces. The large white crosses were the standard type of national marking during this period. The interiors of the open hatches are dark gray. [Bundesarchiv]

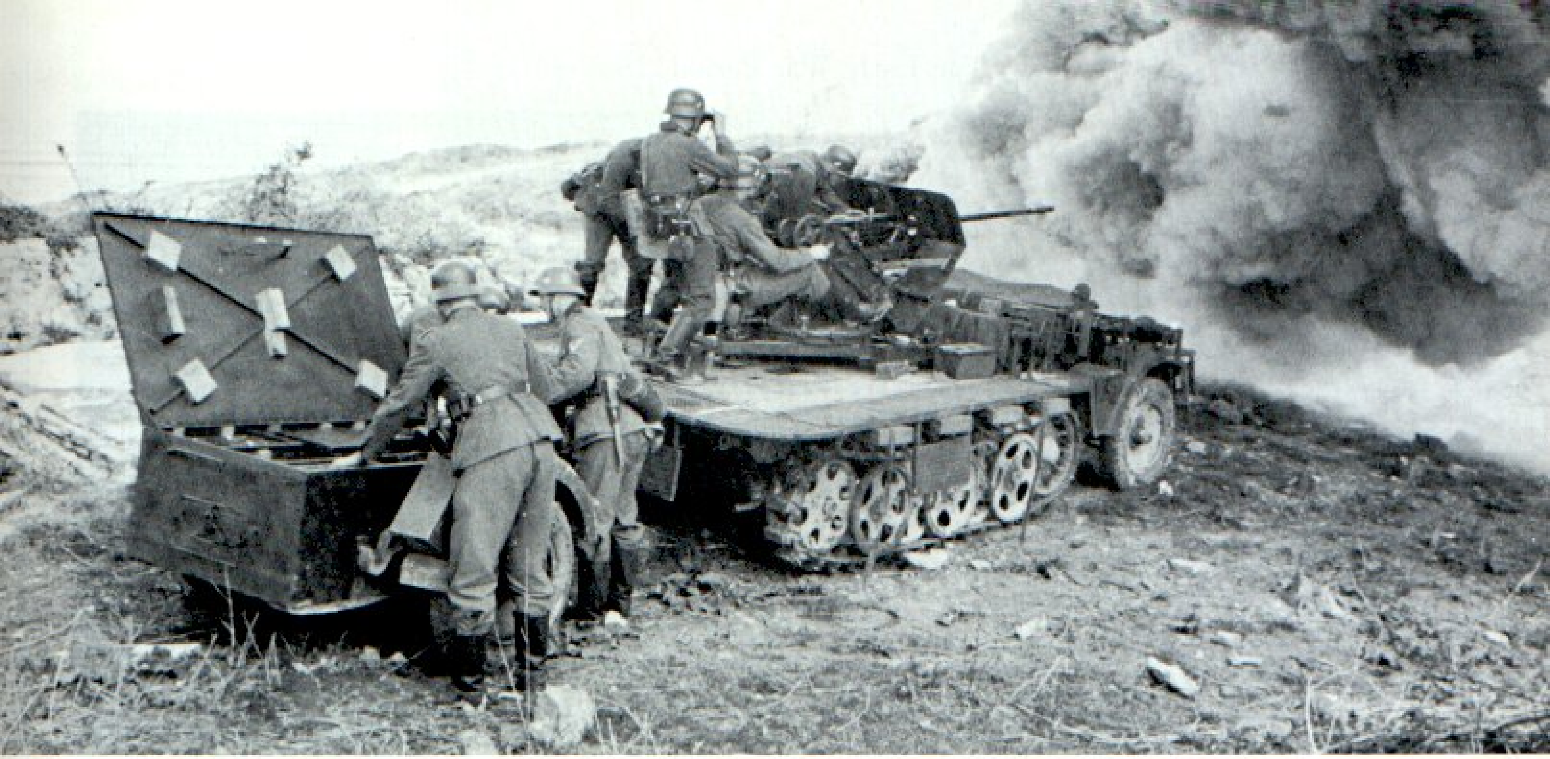
This SdKfz 221 armored car passing through a Polish village shows the effects of a light coat of dust over the dark gray paint. Note the driver's glass windshield. [Bundesarchiv]



A PzKpfw IV ausf A, seen in Poland, displays the overall dark gray color scheme used by most German armored vehicles at this time. The turret numbers and solid cross are in white. Note the spare tracks above the antenna trough, and the saplings logs on the rear deck. [Bundesarchiv]

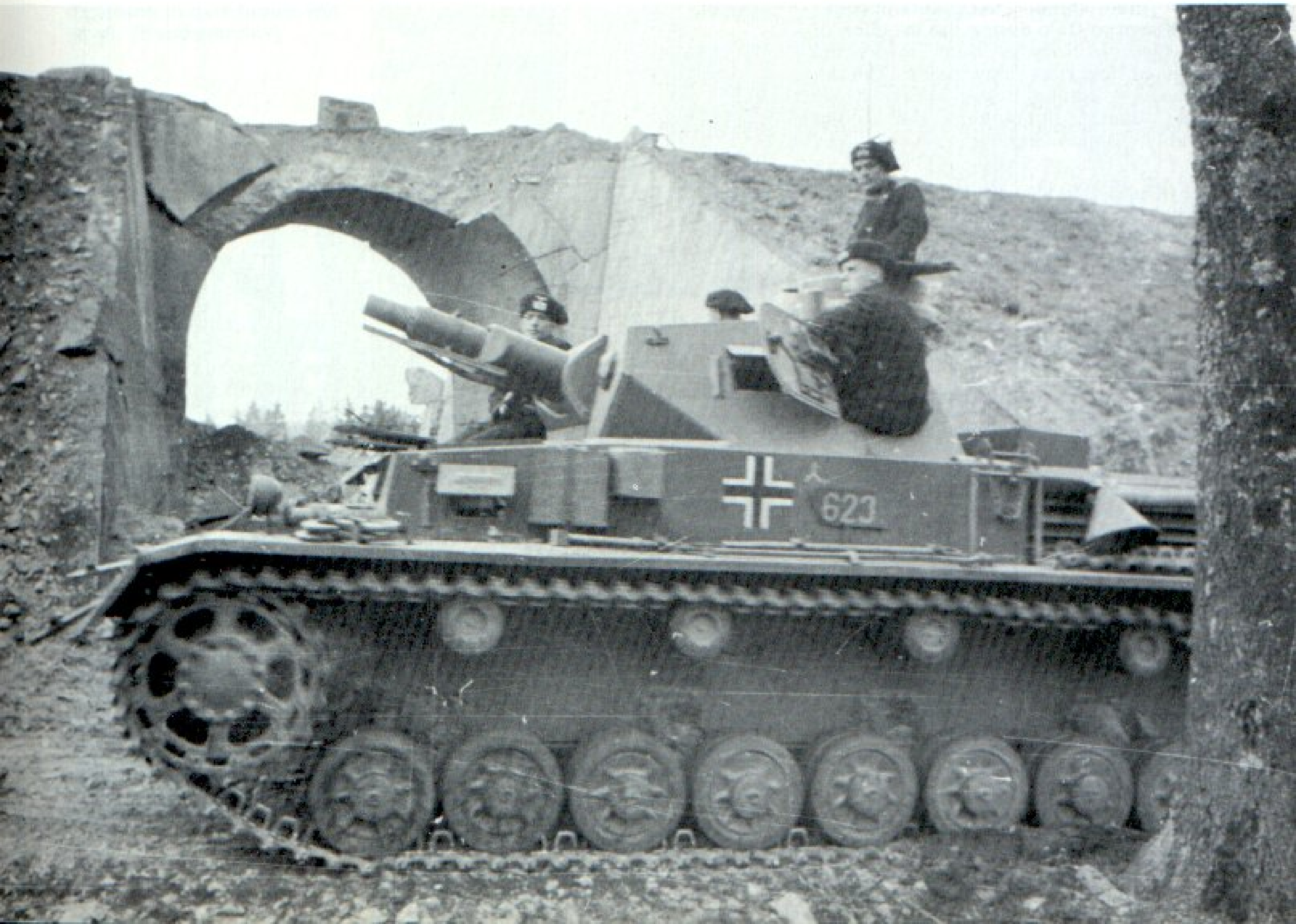
This early PzKpfw III ausf D command tank in Poland in overall dark gray shows an interesting variation in markings. The turret numbers and the centers of the crosses have been painted in yellow - usually used for divisional insignia - to make them less visible to Polish anti-tank gunners. Many German vehicles adopted this modification, as German tank losses in Poland were higher than generally realized, and the white crosses were excellent targets. [Bundesarchiv]

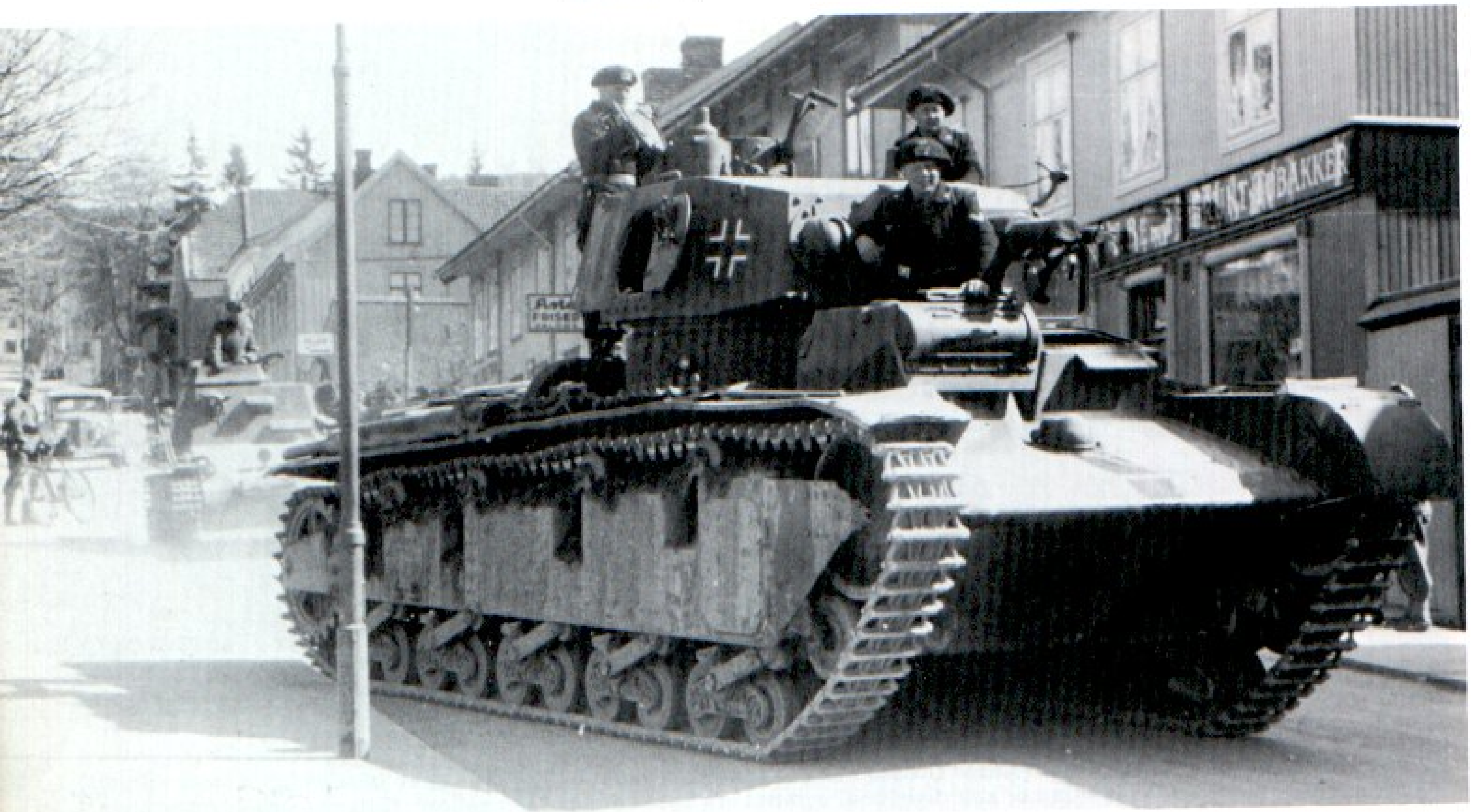




A SdKfz 10/4, mounting a 2 cm Flak 30, is in overall dark gray. A heavy layer of dust covers the wheels and top of the vehicle. [Bundesarchiv]

This PzKpfw IV ausf D of the 5th Panzer Division is seen in France, 1940. The dark gray base color is only lightly covered with dust. The tank number and divisional symbol are applied in a deep yellow. Note the newer open style of national cross marking, intended to reduce its visibility to enemy gunners. [Bundesarchiv]

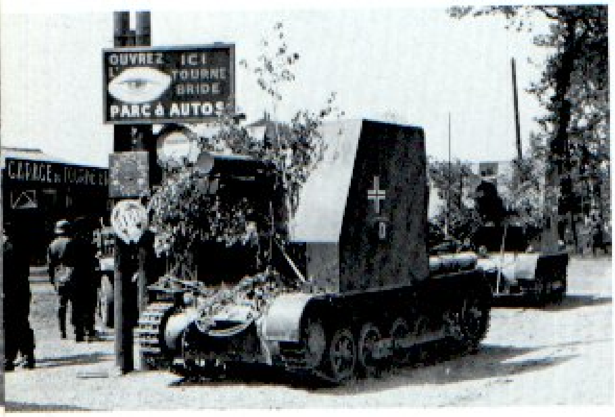


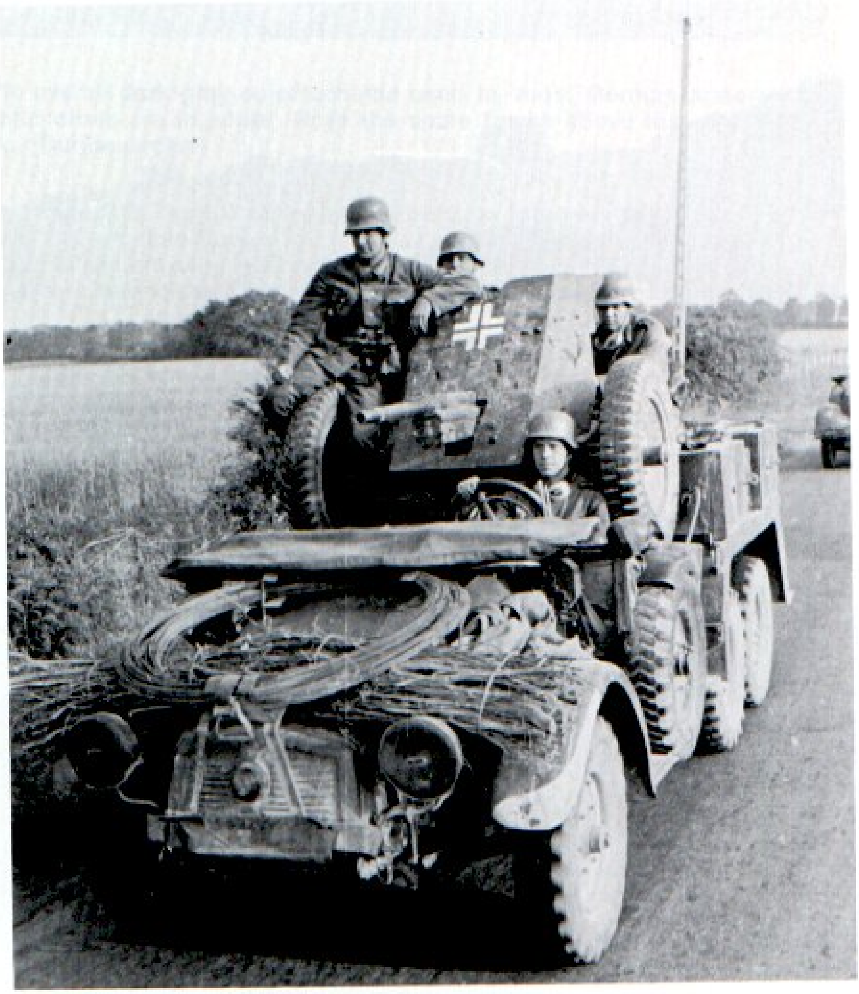


One of the three "Neubaufahrzeuge" prototypes sent to Oslo during the invasion of Norway, 1940. A layer of dust covers the lower part of the dark gray paint. The kl. Befehlspanzer I behind it has a very heavy coat of dust, lightening the color considerably. [Bundesarchiv]

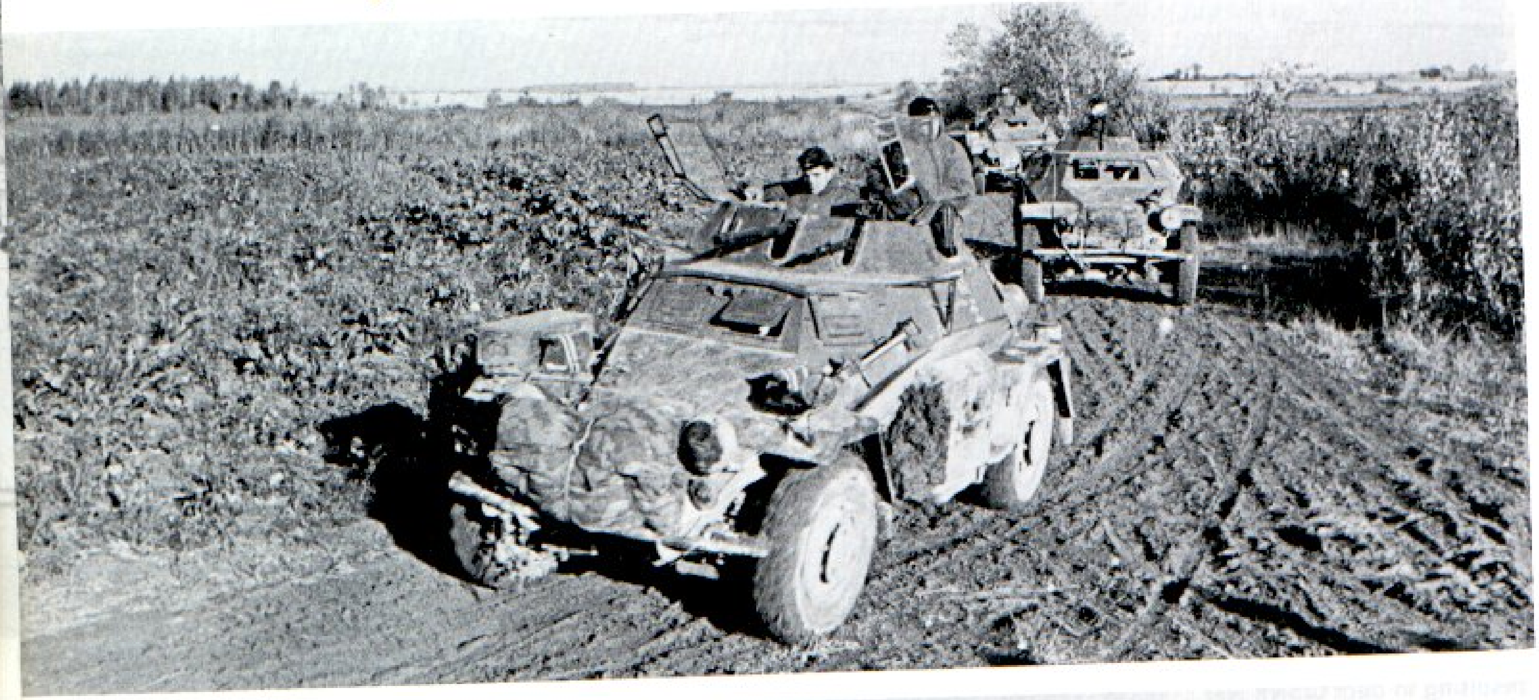
A Kfz 69 [Krupp L2H143] mounting a 3.7 cm PAK 35/36, seen during the invasion of France. Overall dark gray with a layer of dust. Note the white edges on the fenders. [Bundesarchiv]

This S.P. mounting, with a 15 cm s.I.G. on a PzKpfw I ausf B chassis, shows the early use of foliage to improve the effects of camouflage paint. The French sign overhead marks the entrance to an auto parking area. [Bundesarchiv]

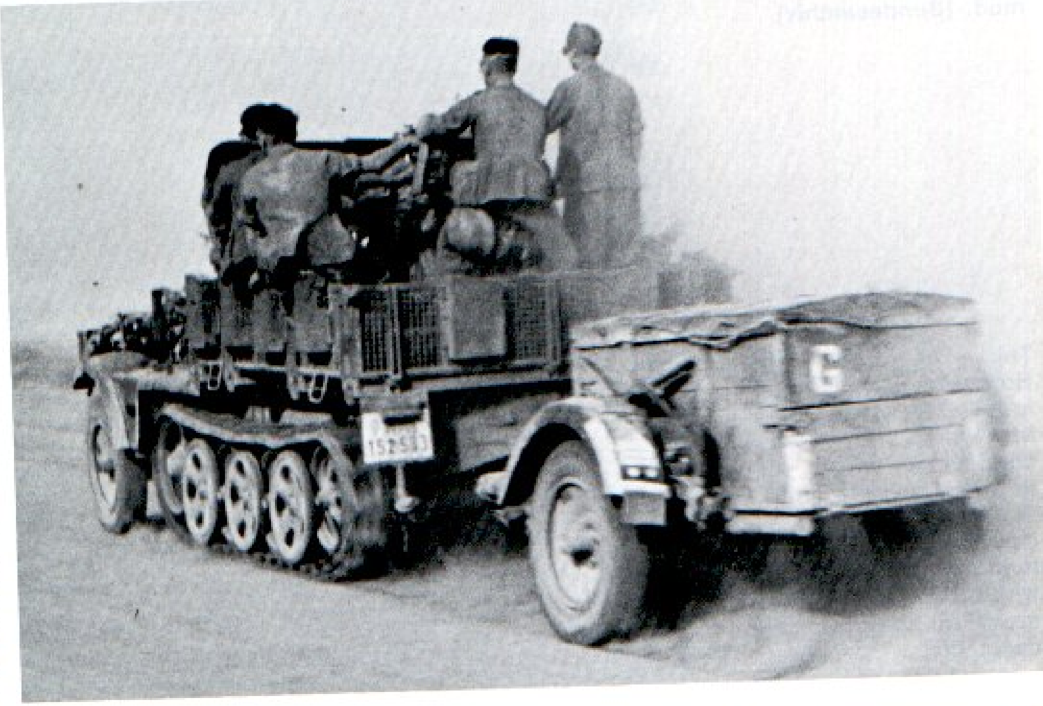




Barbarossa



This early SdKfz 222 armored car, followed by an SdKfz 223 and an SdKfz 221, in Russia during mid-1941 show the effects of heavy mud on vehicles. Thick wet brown mud is still clumped on parts of the vehicles. Dried mud is much lighter, and covers virtually all of the vehicles' lower hulls and chassis parts. [Bundesarchiv]

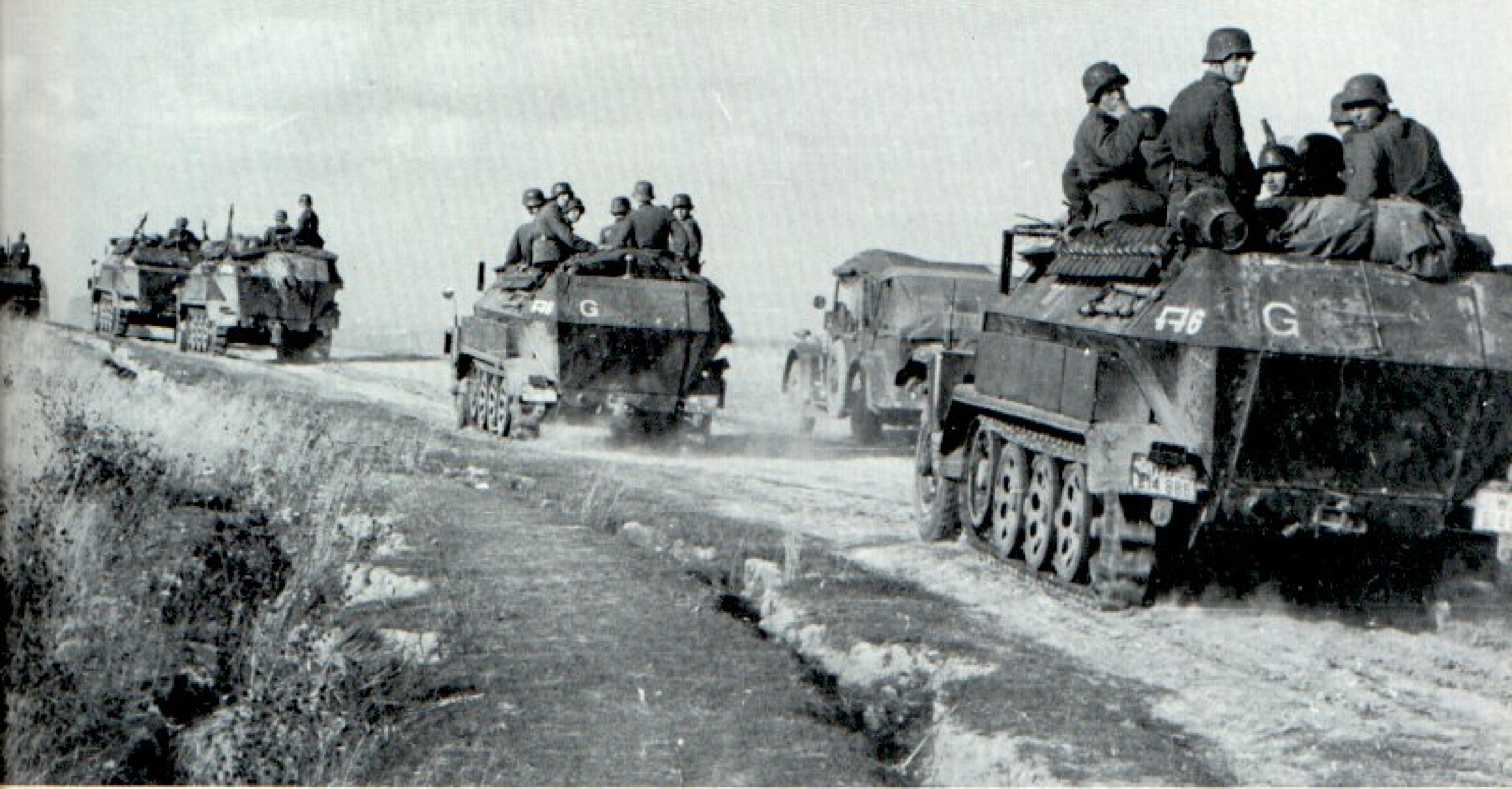


This SdKfz 10/5 halftrack during "Barbarossa", the invasion of Russia, is in an overall dark gray, with white edges on fenders for better visibility at night. The white "G" indicates the battle group commanded by Heinz Guderian. [Bundesarchiv]

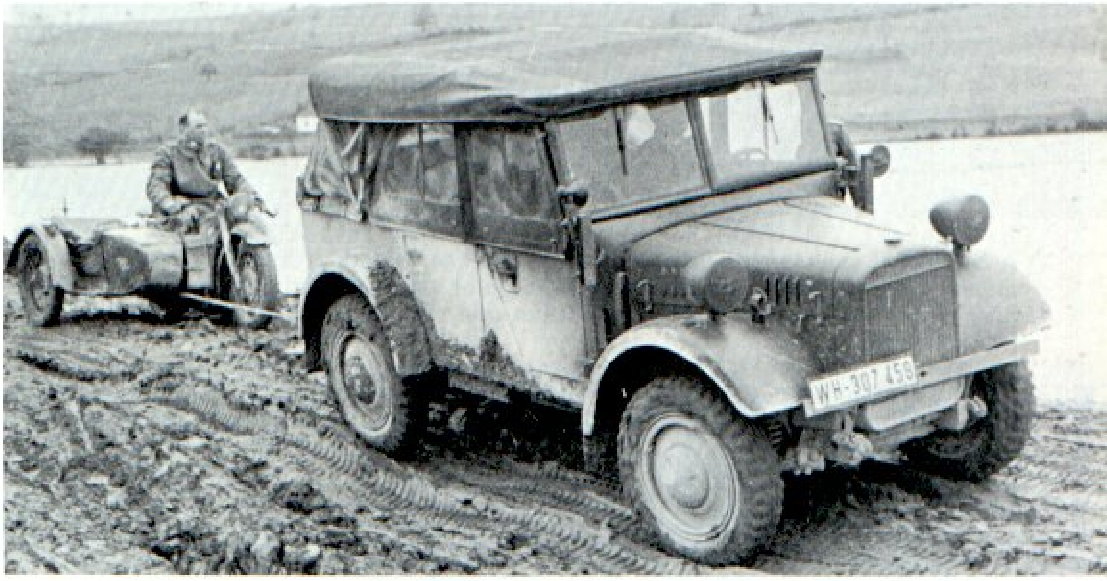
Russia 1941

German equipment during the latter half of 1940 and into 1941 was overall dark gray. During this period, the system of markings was undergoing transition. New tactical insignia were adopted for the Panzer Divisions, and widespread attempts were made in painting larger vehicle identification numbers on turrets of tanks, etc.

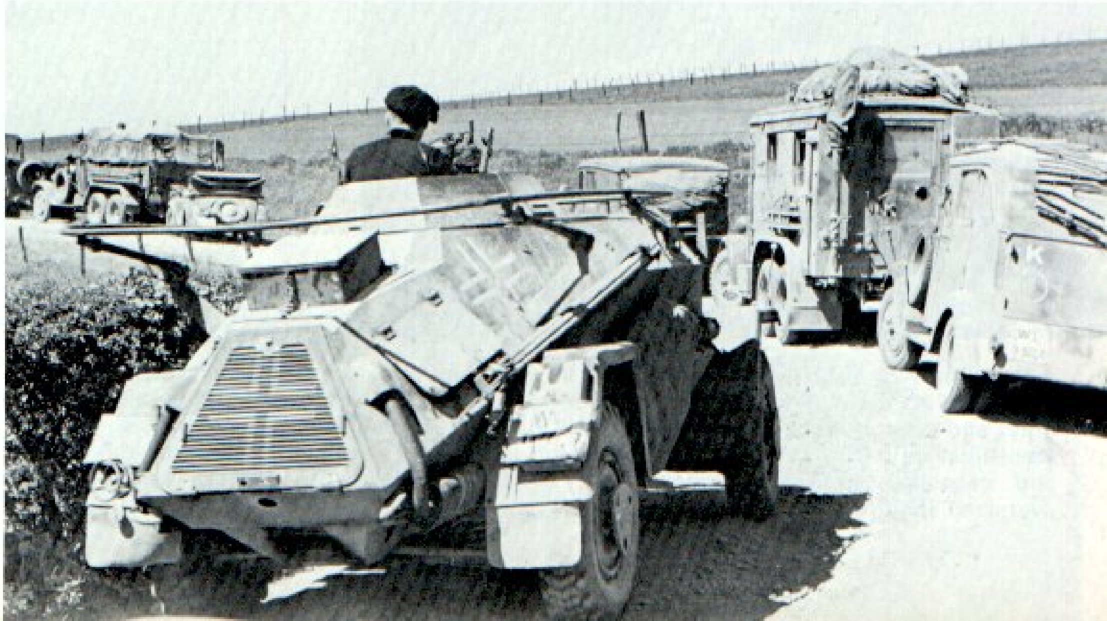
The invasion of Russia in June, 1941 (Operatio "Barbarossa") resulted in the capture of thousands of Russia tanks, vehicles, and aircraft. Many of these vehicles wer impressed into German service, and in the case of trucks ar cars, the original Russian green shade was usually retaine Russian tanks and armored vehicles that were used by Germa occupation forces were prominently marked with large crosse and many vehicles, modified for German use, were repainte overall dark gray.



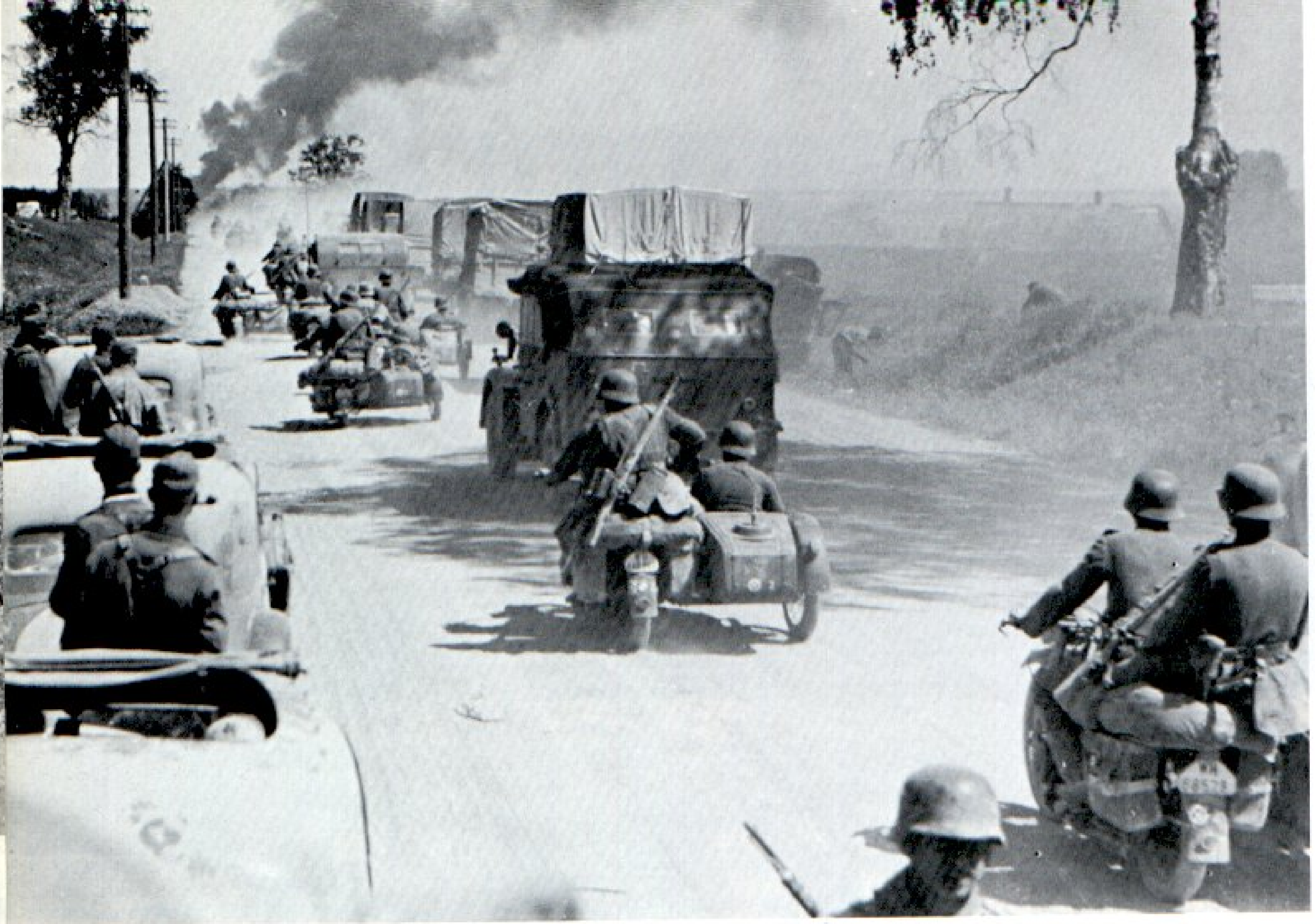
These SdKfz 251 Ausf C's of Guderian's force advance into Russia, 1941. The dark gray paint is covered with mud and dust directly behind the tracks. This shows the early stages of weathering by dust and mud. [Bundesarchiv]



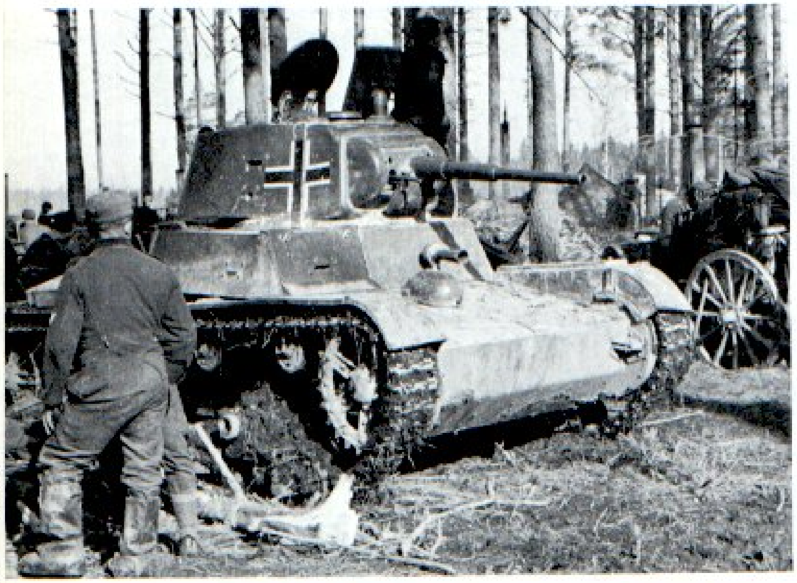
A Stoewer Kfz 4 le.E.Pkw. tows a BMW R75 motorcycle and sidecar. Again note the pattern of wet brown mud, and the lighter dried mud and dust thrown up on the side of the vehicle. [Bundesarchiv]



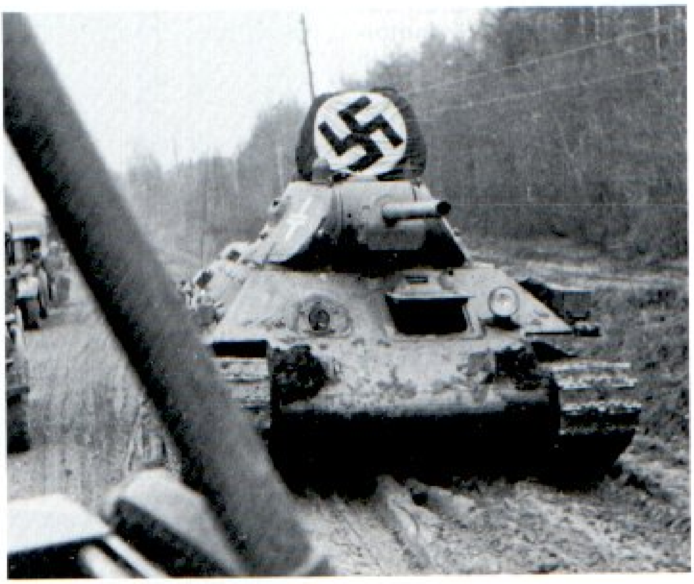
Heavily weathered vehicles drive into Russia during "Barbarossa". These are part of von Kleist's attacking force. It is easy to see just how fast and how thoroughly dust and mud could lighten and cover the early war dark gray paint. [Bundesarchiv]



A column of vehicles moves into action. The line of cars at the left is noteworthy for the solid coat of dust that makes them look like yellow or tan sand-color vehicles. Only the scuff marks and handprint indicates the dark gray paint scheme underneath, proof that one can never make quick assumptions about camouflage practices. [Bundesarchiv]



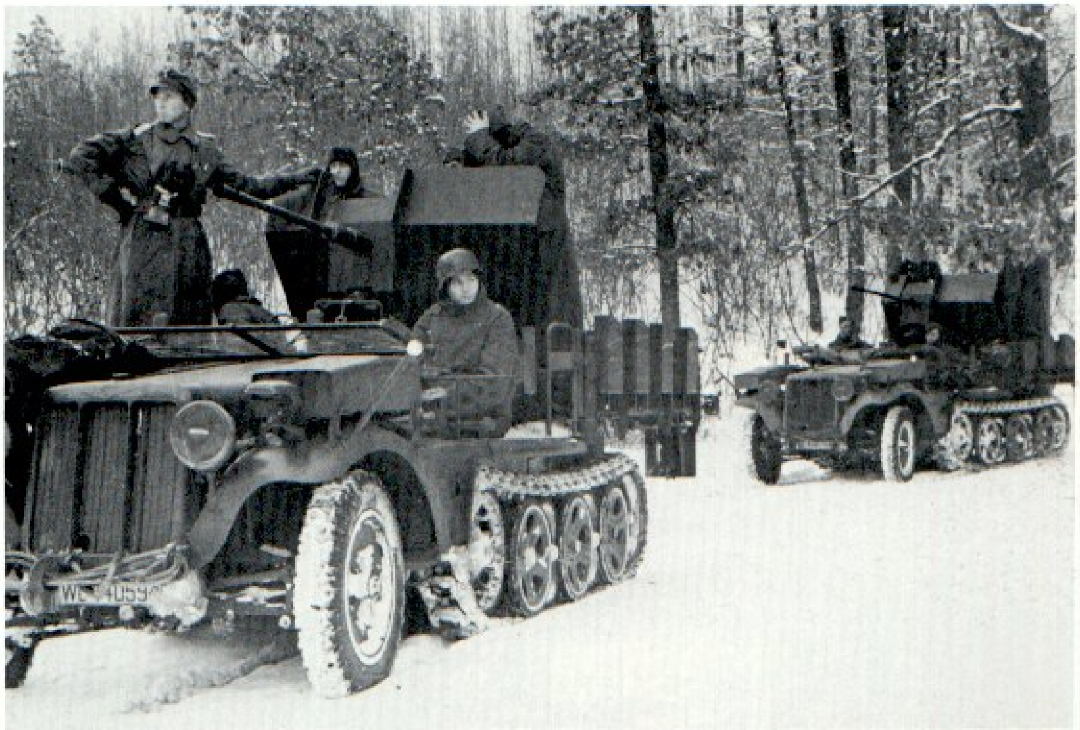
A Russian T-26 light tank captured by the Germans and later used by them. The vehicle has been repainted dark gray, and a large black and white cross is used to make identification easier - many gunners fire on a silhouette and captured equipment was usually marked with oversized insignia. [Bundesarchiv]



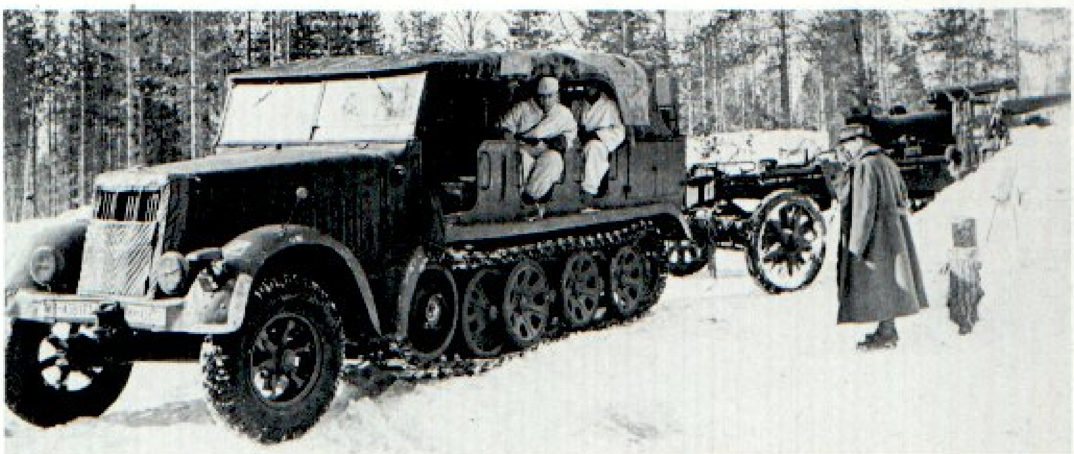
This T-34/76 has been painted dark gray and marked with fairly large white outline crosses. The German flag wrapped around the turret roof hatch is for proper identification by German pilots. This tank is quickly acquiring a heavy coat of mud in the fall rains. [Bundesarchiv]

Winter 1941

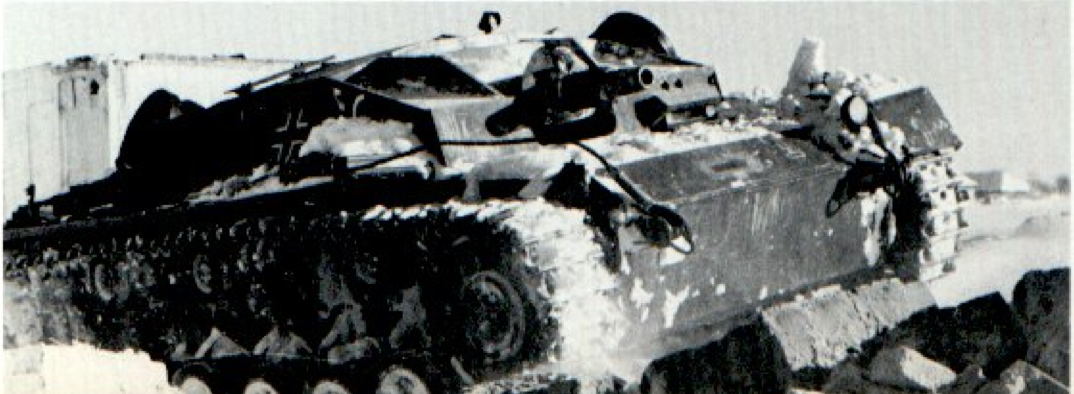
With the approach of winter during the first year of the Russian campaign, HM 1941, no. 1128, dated November 18, 1941, specified the issuing and use of a washable white winter camouflage paint, to be thinned with water and applied to all vehicles and equipment where snow was on the ground. In the spring, this paint was to be washed off, exposing the dark gray base color. Unfortunately, the order came too late, and with the usual delays in production and distribution, most troops in Finland and northern Russia did not have enough of the washable white paste. Many vehicles received a hasty, rough coat of lime (calcimine) white-wash. Others, lacking even this crude substitute, had to use sheets, white cloth strips, or even hand-packed snow in an attempt to hide the conspicuous dark gray paint. Many vehicles received no white camouflage at all.



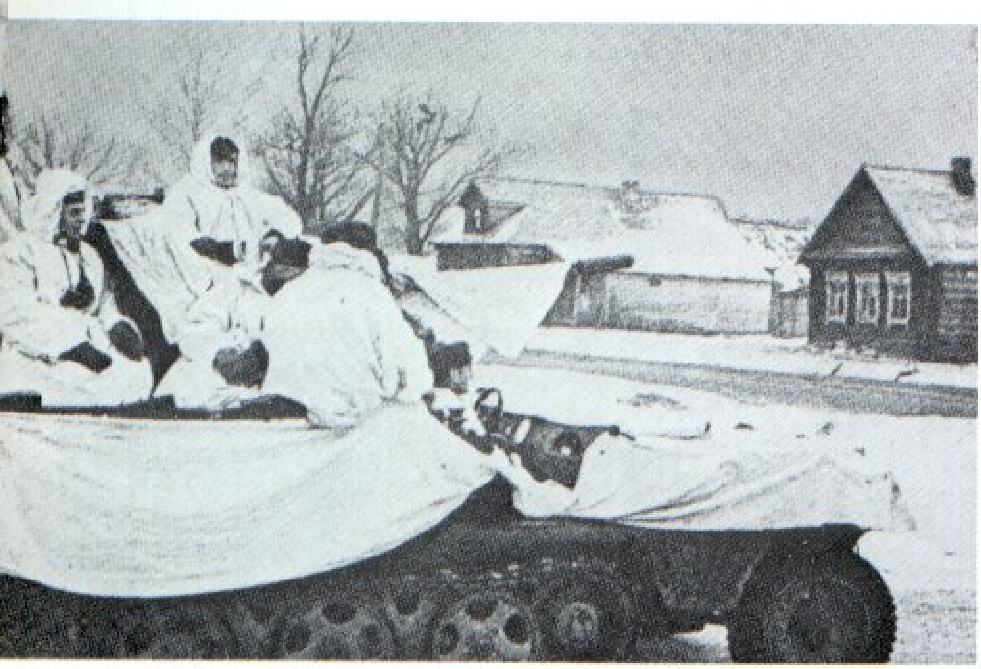
Two SdKfz 10/4 self-propelled light flak mounts in Russia, 1941. The disadvantages of dark gray paint in snow are obvious. Not only was the paint a great contrast, but in winter, there was less mud and dust to dirty up the vehicles, with the result that they stood out even more. [Bundesarchiv]



This SdKfz 7 8-ton tractor and 15 cm field gun again show the high contrast of the dark gray against snow. [Bundesarchiv]

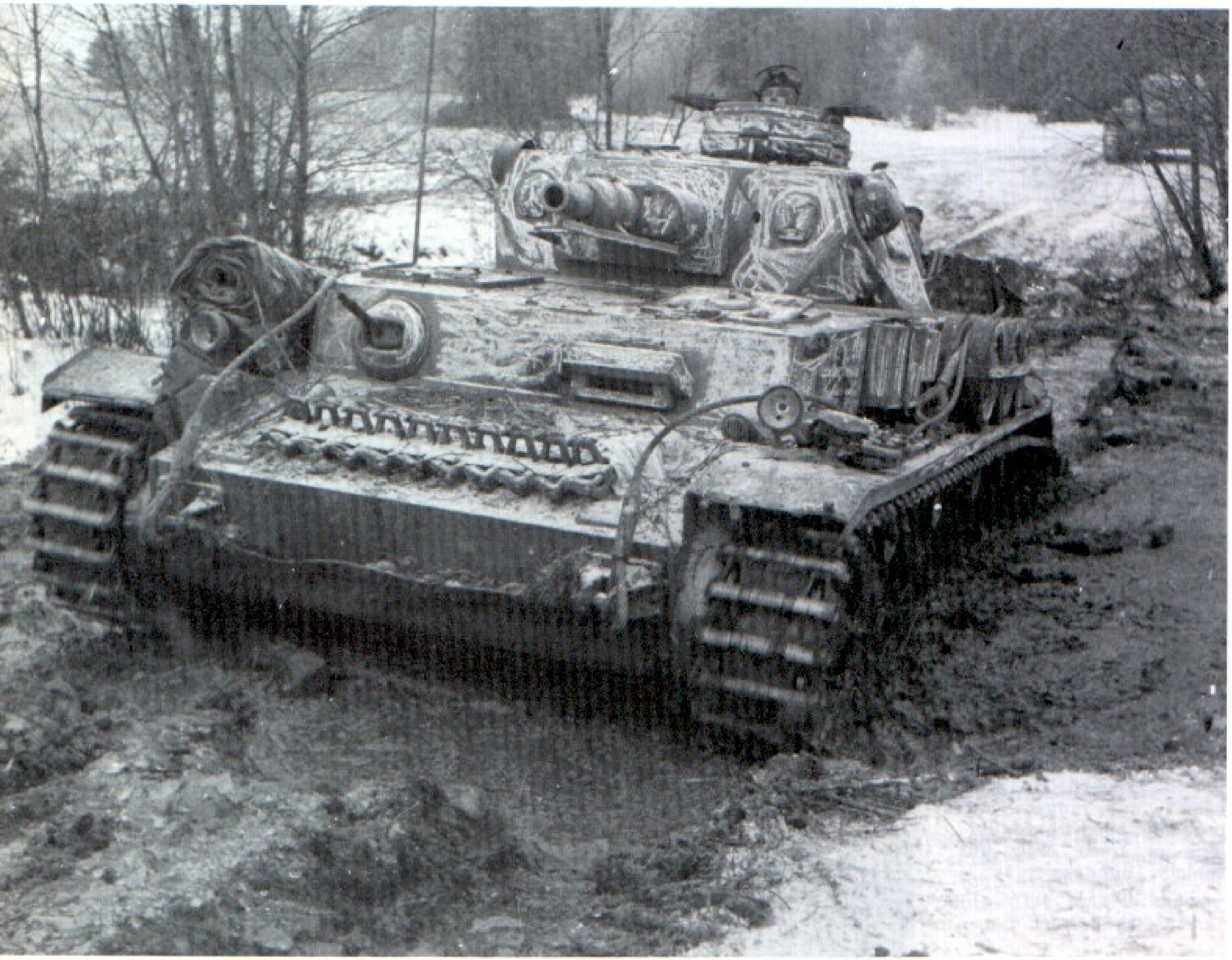


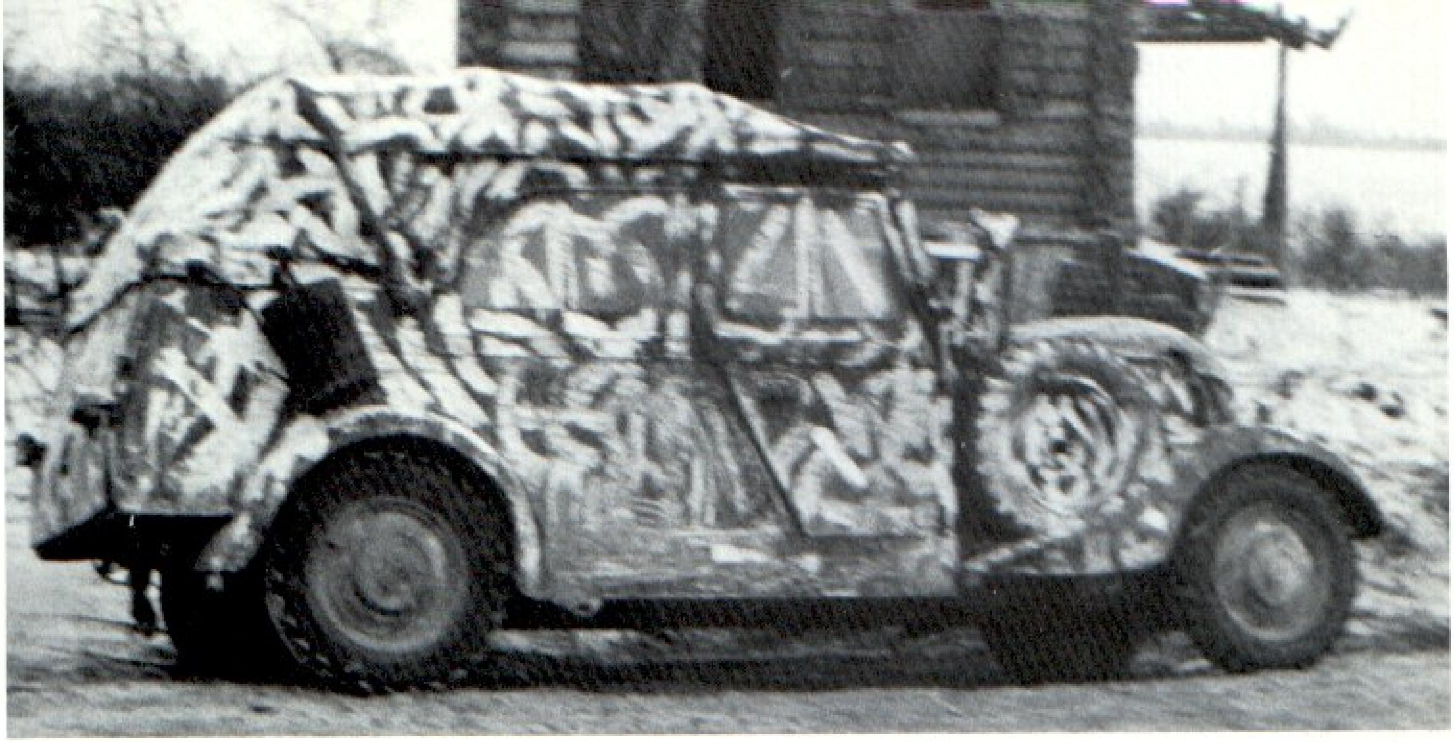
This StuG III ausf D in Russia, 1941, has only piles of snow to help cover the dark paint. In this case, the snow has probably fallen from buildings or trees onto the vehicle. [Bundesarchiv]



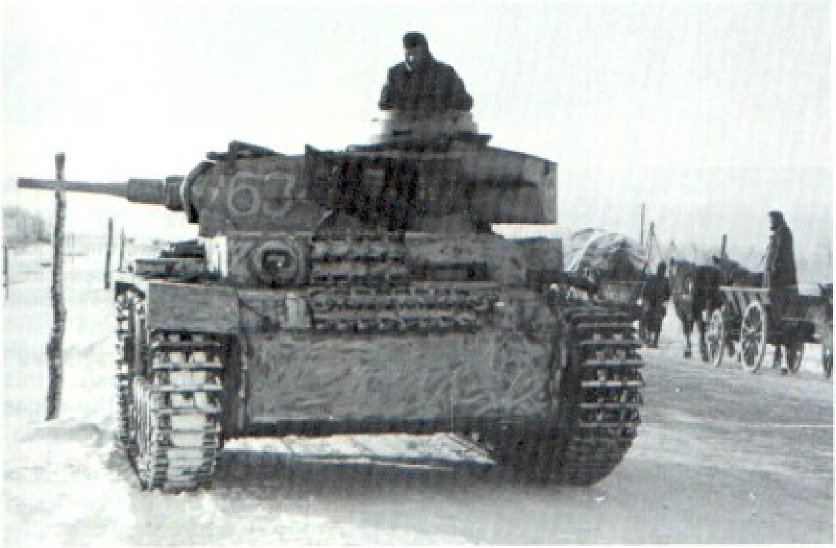
The crew of this SdKfz 10/4 was lucky enough to be issued white winter camouflage covers. Their vehicle, however, has been left with only bedsheets for white camouflage protection. In the first weeks of the 1941 snows, many vehicles did not get even this crude protection.

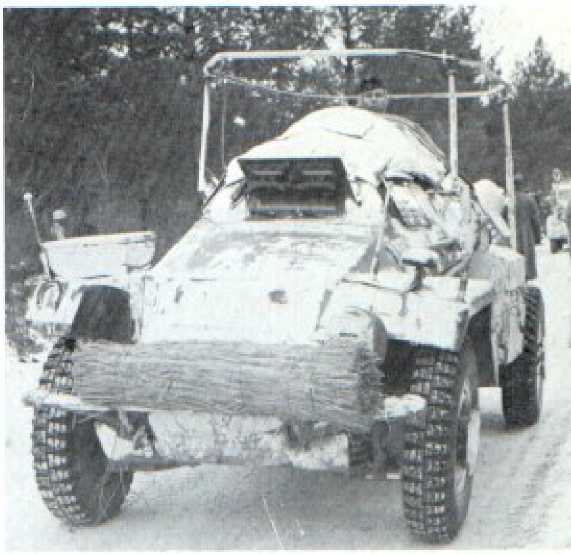
This PzKpfw IV ausf FI shows perhaps best of all the last-ditch methods used to cover vehicles in the 1941 winter campaign. It is covered with scribbled lines in chalk! [Bundesarchiv]





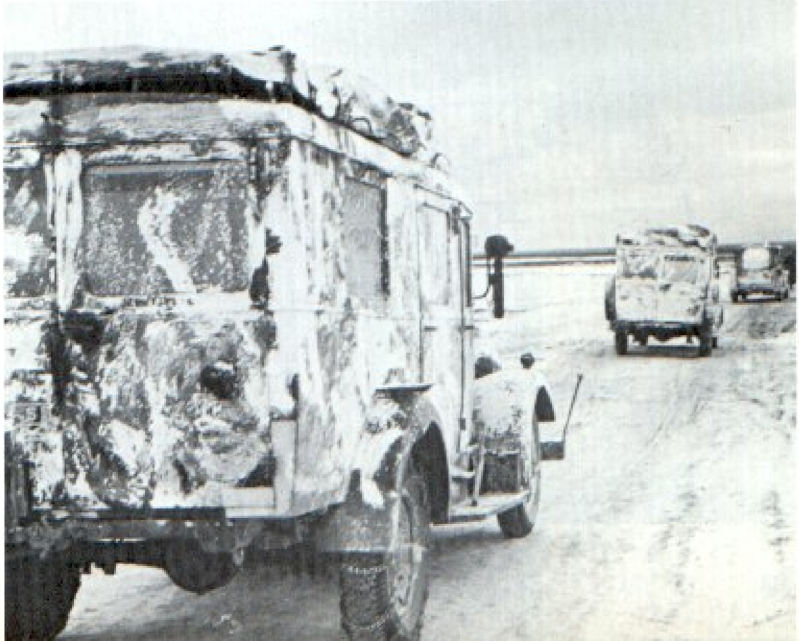
The supplies of white paint and even calcimine whitewash were often limited, and crews had to stretch the amount by painting only parts of the vehicles or by use of patterns of stripes or spots in white. [Bundesarchiv]



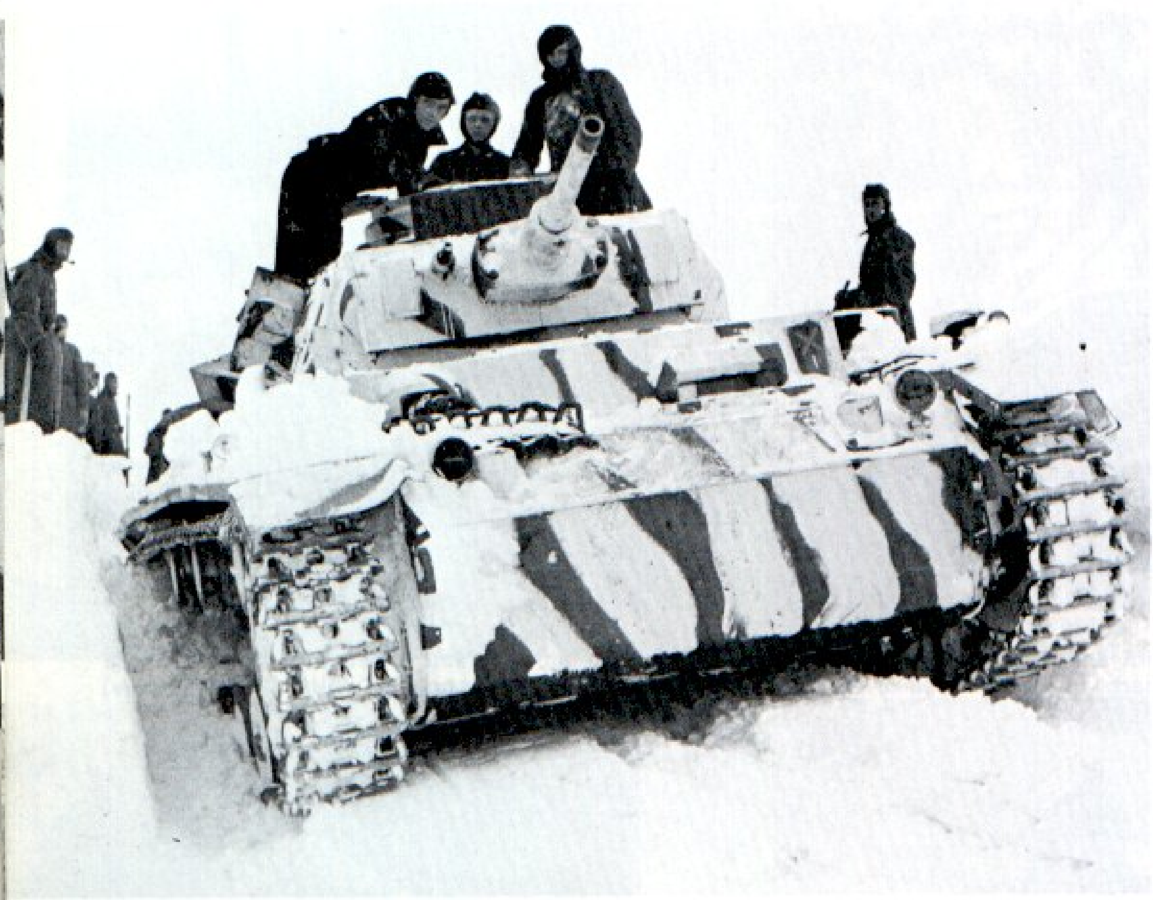


This PzKpfw III ausf G is a good example of the results of paint shortages. The paint has been applied in small strokes to only the front of the hull, and the front and forward sides of the turret. No white paint was applied to any of the rear turret or rear hull surfaces. [Bundesarchiv]

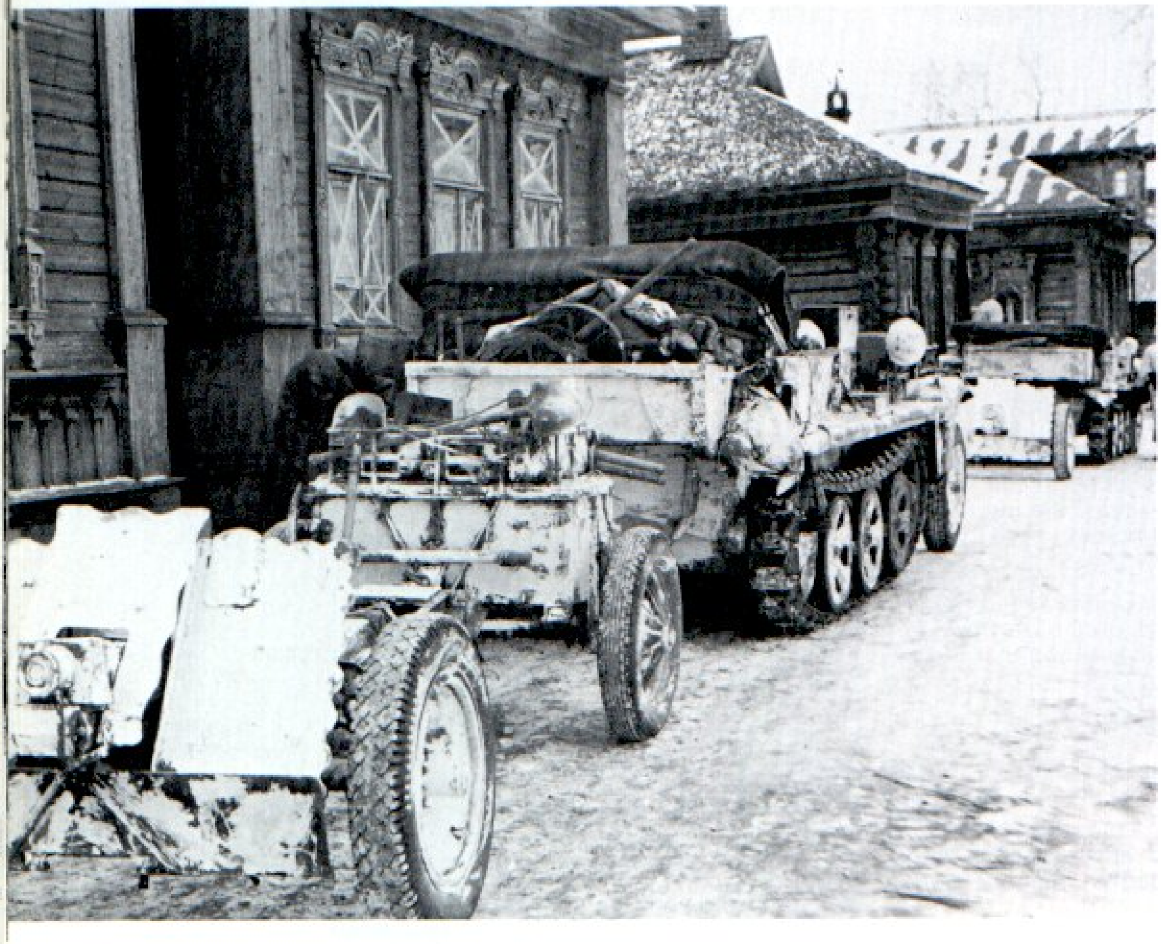
This SdKfz 261 armored car, whitewashed fairly well, is already showing the dark gray base through worn-away areas of the whitewash ruined by rain or water. [Bundesarchiv]



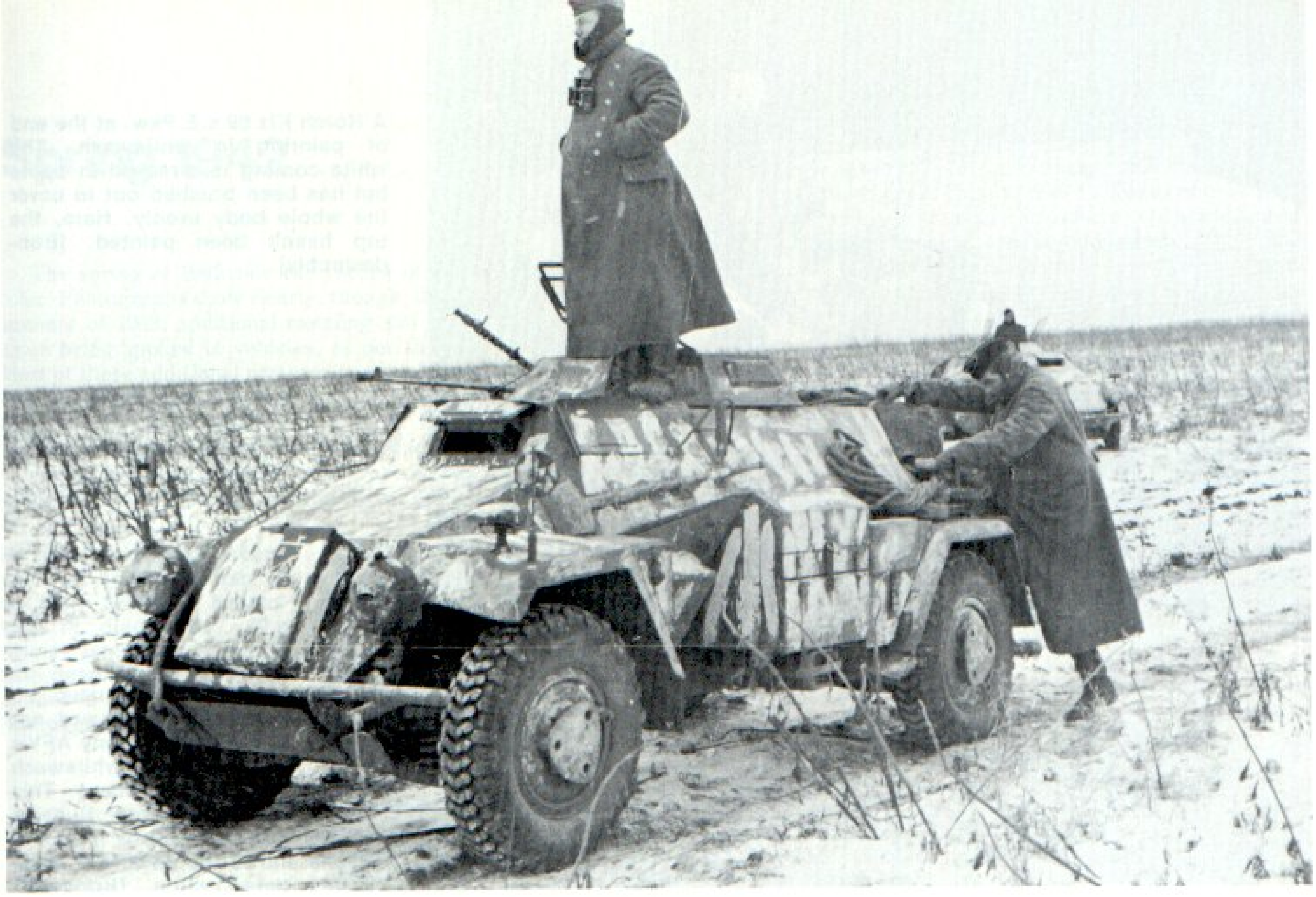
This truck as been splattered and smeared with whitewash, obviously a badly rushed job. [Bundesarchiv]



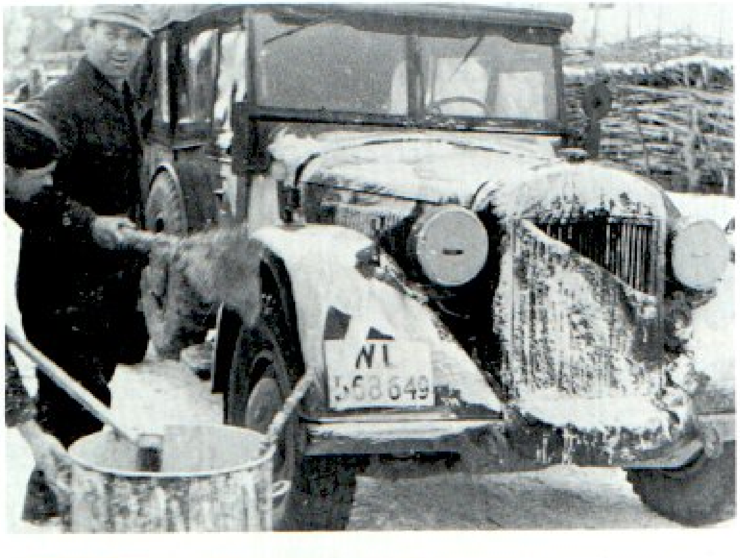
This PzKpfw III ausf J of the 5th Panzer Division has a scheme of broad bands of whitewash over the dark gray base color. In addition, snow has been left on the mudguards as an additional camouflage measure. [Bundesarchiv]



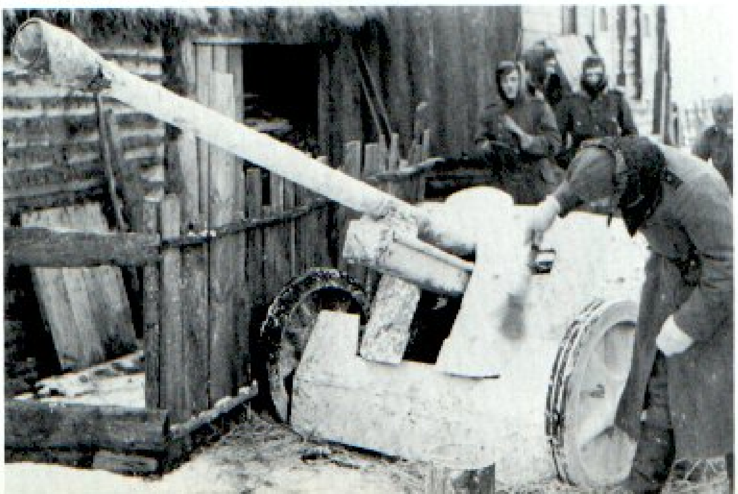
Two SdKfz 10 1-ton tractors with 7.5 cm le I.G. guns and limber, seen in a Russian town, 1941. Both vehicles and guns have received fairly thorough coats of whitewash - this is wearing off on the edges of the track mudguards. [Bundesarchiv]



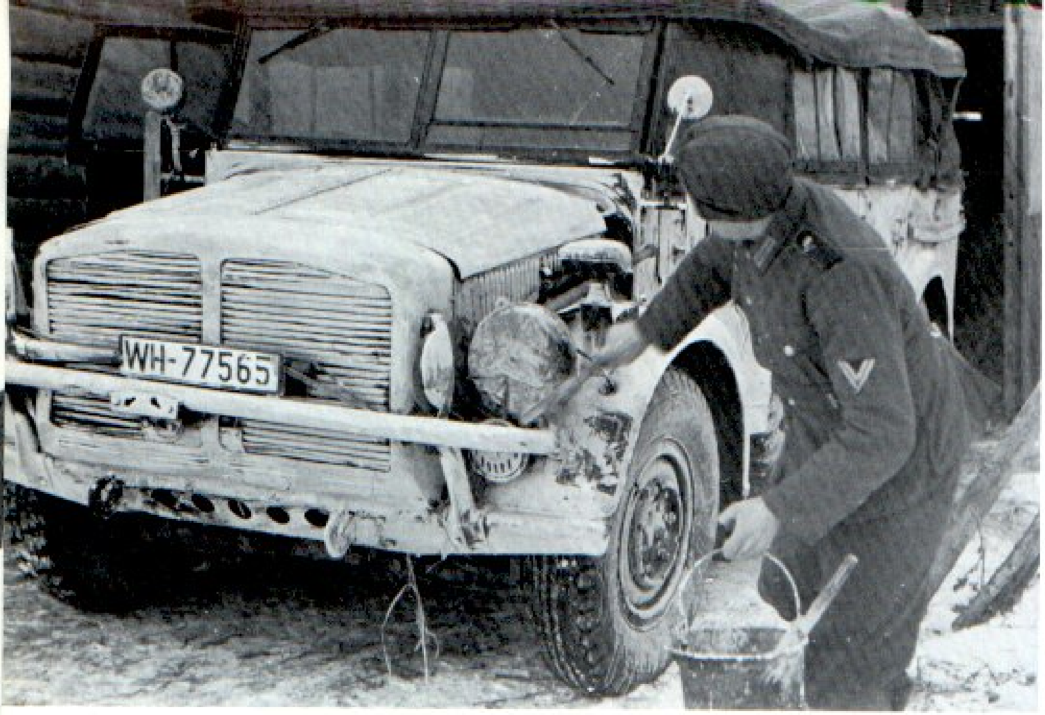
A case in which the shortage of paints was not serious. The white vertical stripes of this SdKfz 221 blend into the overgrown snow-covered fields better than a solid coating of whitewash. [Bundesarchiv]



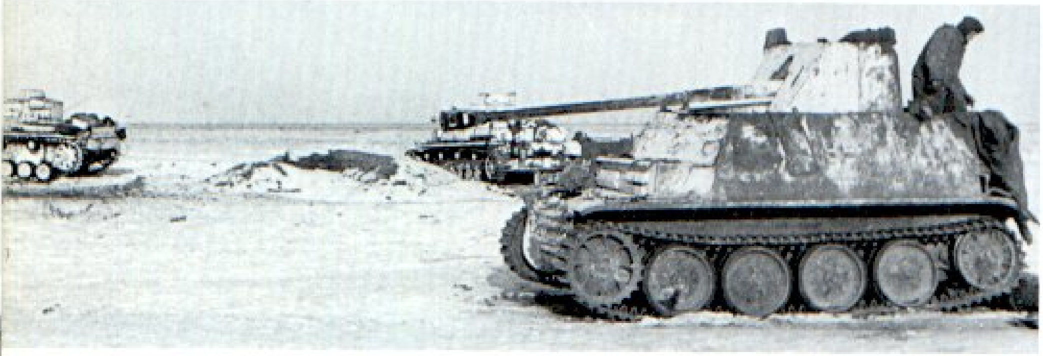
A Horch Kfz 15 m.E.Pkw receives a rough coat of whitewash, applied with a small push broom, and a straw broom used to splatter the whitewash all over the vehicle. The push broom was used to smooth out the splattered coating and give an overall white finish. [Bundesarchiv]



This 5 cm PAK 38 has been splattered all over to make an even coat of whitewash. The paint has built up in globs on the barrel and lower shield. Note the tire is largely covered also. [Bundesarchiv]

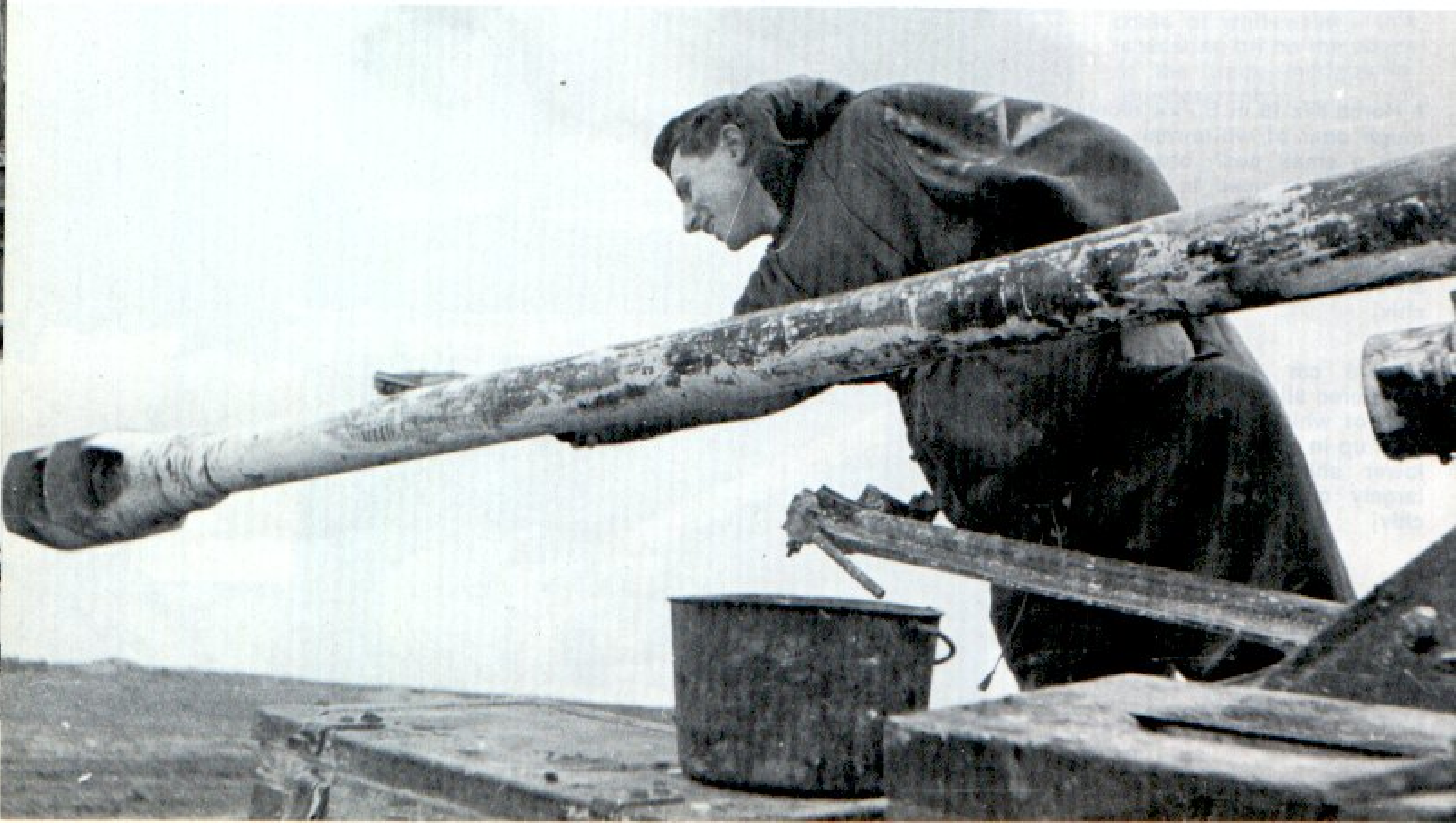


A Horch Kfz 69 s.E.Pkw. at the end of painting in whitewash. The white coating is streaked in spots but has been brushed out to cover the whole body evenly. Here, the top hasn't been painted. [Bundesarchiv]



The whitewash coating used on many vehicles in Russia was not durable. In the spring, many AFV's lost much or all of their whitewash in the rain or spring thaws. This self-propelled 76.2 mm Russian PAK 36[r] on the PzKpfw II ausf D chassis shows the advanced stage of this deterioration. [Bundesarchiv]

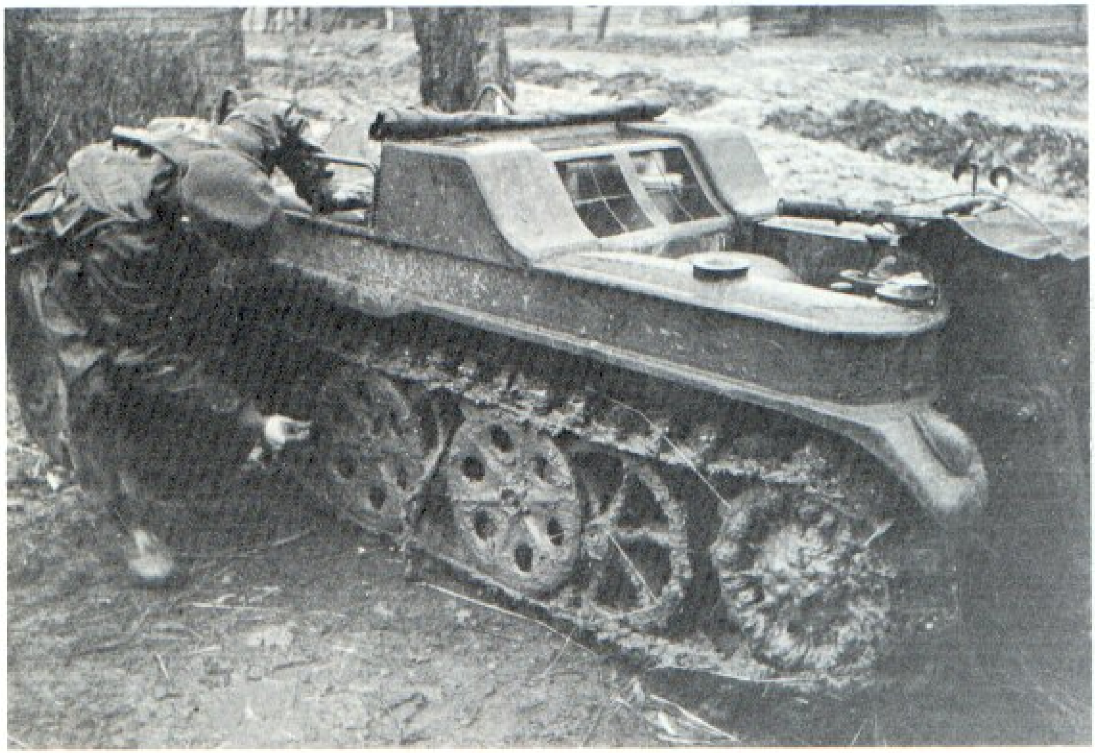
This crewman of a "Rhinoceros" self-propelled 8.8 cm gun is washing off the white winter camouflage paint. Both the paint and whitewash were removed with water. [Bundesarchiv]



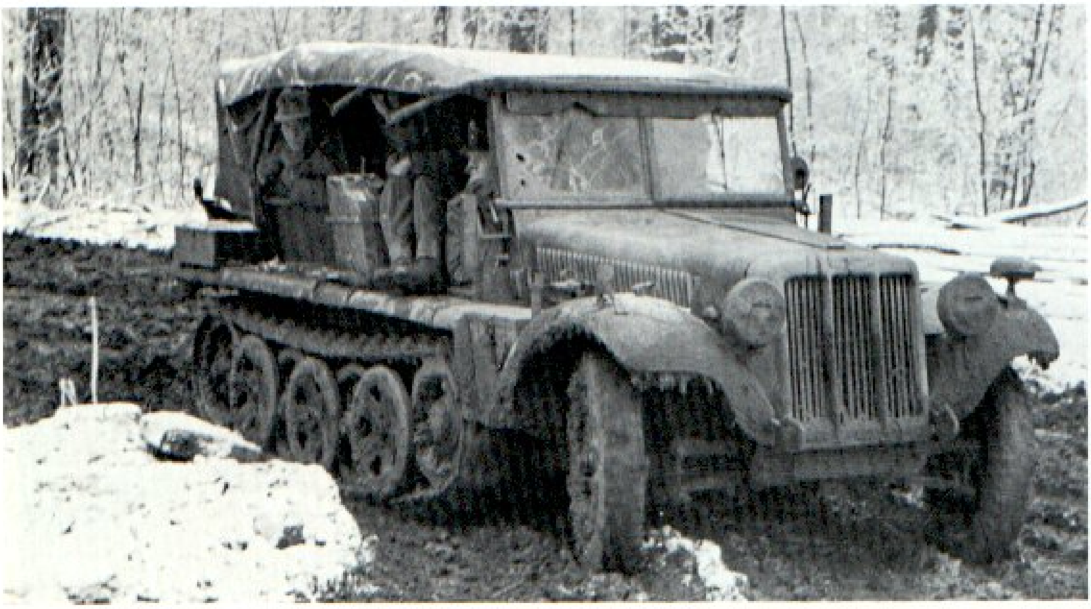
Spring 1942

The spring of 1942 saw the return of the dark gray base color. Photographs show clearly, though, that in the spring and summer of 1942, additional mottling and color patterns were again being applied to vehicles, as per the pre-war practices. Most of these additional patterns were painted in dark greens, but use of the pre-war dark brown was possible too. Field commanders were given considerable latitude in ordering vehicle repainting, and the mottled camouflage certainly was more effective than the solid dark gray. Foliage and bundles of grass and hay were often used to break up vehicle shapes and allow them to blend into the local terrain. Many vehicles used liberal applications of local mud - this had to be renewed regularly, but was very useful for localized camouflage color. In the southern campaigns in Russia - the Caucasus and Crimea - many vehicles adopted tropical camouflage, with widespread use of sand color paints, most probably identical to the official Africa colors. The terrain and weather in southern Russia, especially in the summer, were very similar to the desert and coastal areas of North Africa, and thus the use of tropical colors was desirable.

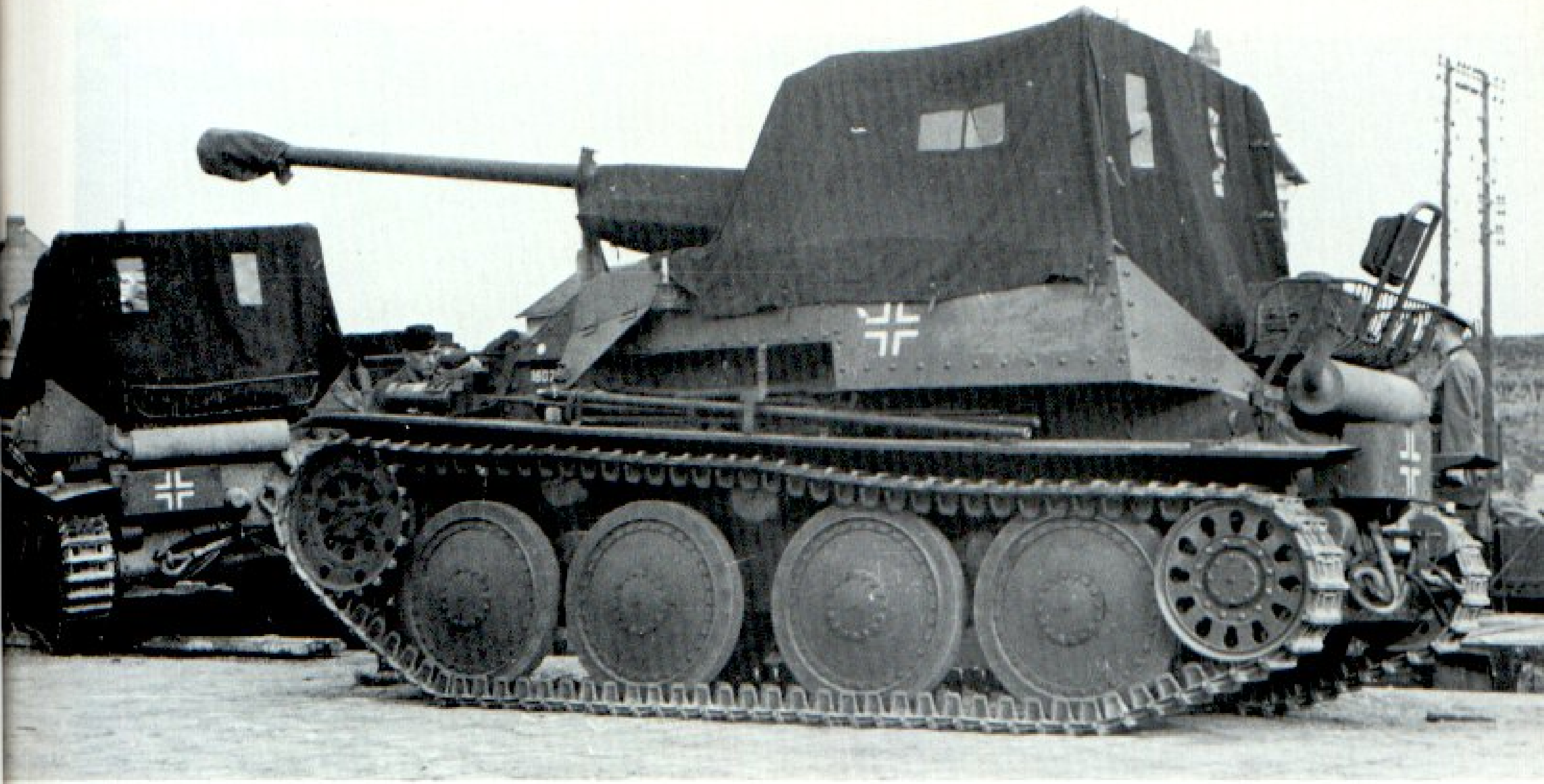
It should be noted that on many occasions, particularly because of heavy losses on the Russian front, equipment finished in the tropical colors (yellow brown/gray green or brown/gray) and intended for Africa, was instead shipped to the Eastern front as replacements, further confusing the color system already in use.



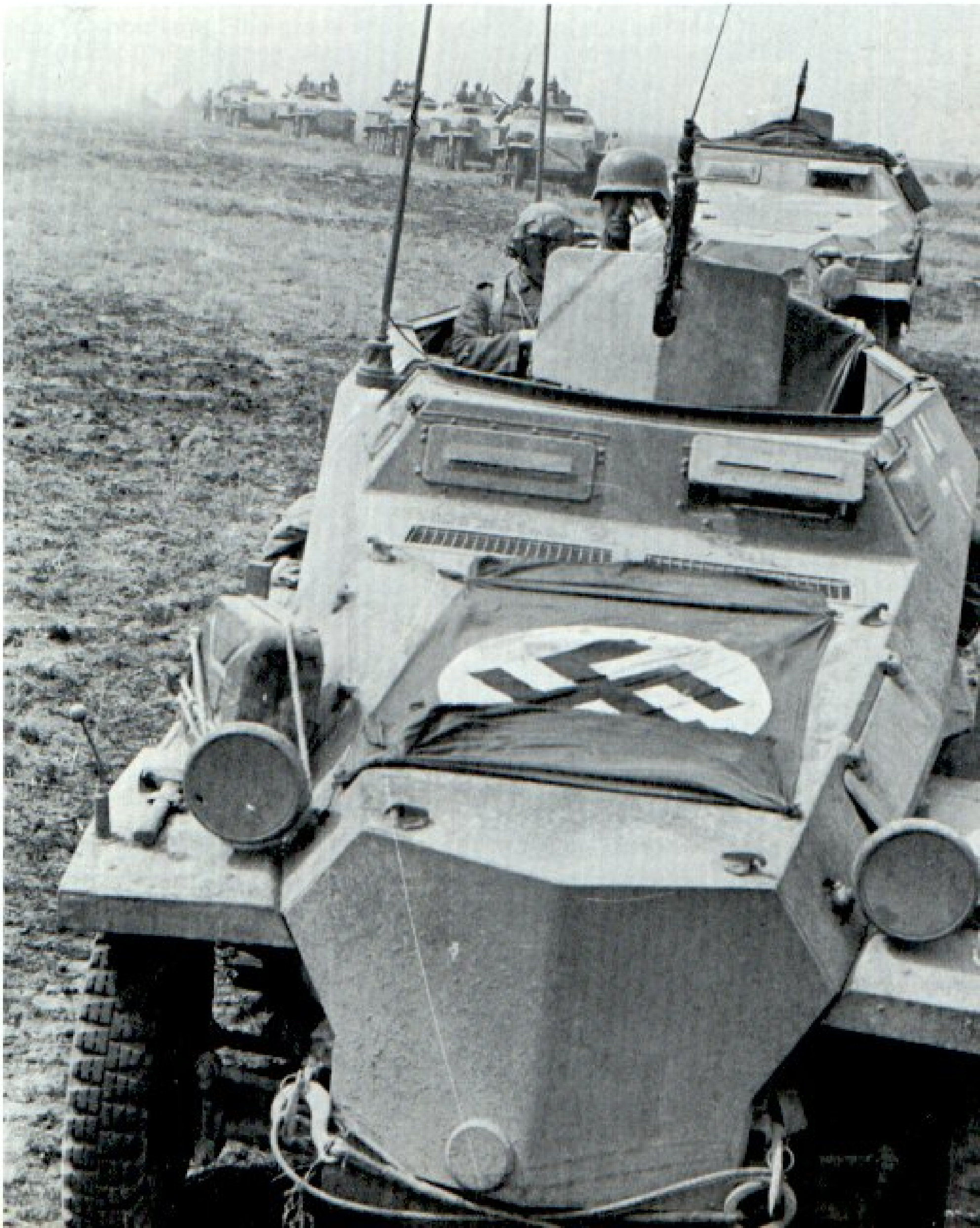
In Russia, spring means mud, as this crewman of an NSU SdKfz 2 Kettenkrad is discovering. The whole vehicle is covered with deep brown wet mud, almost a chocolate color. [Bundesarchiv]



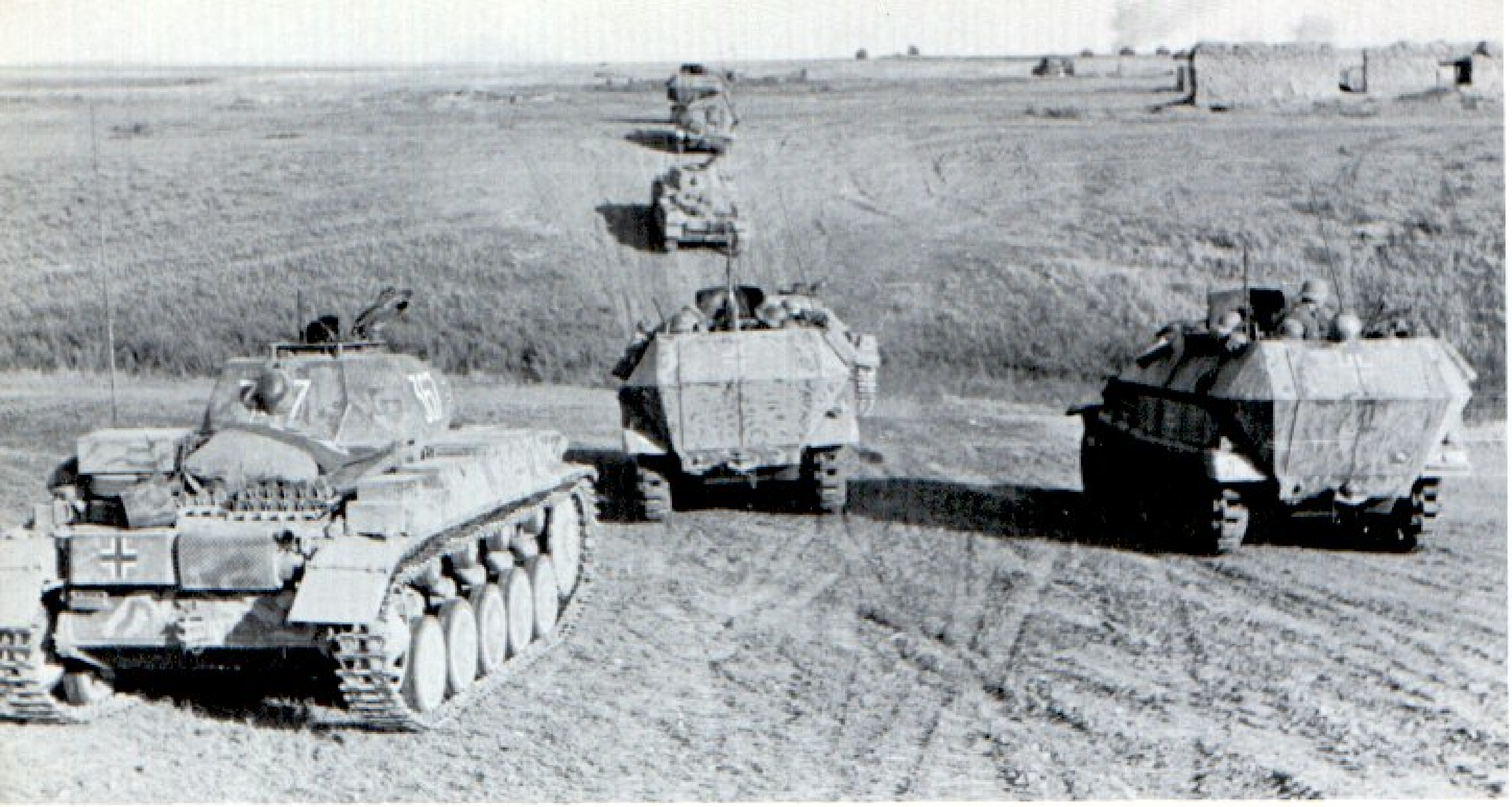
A SdKfz 10 negotiates a muddy road near Leningrad in early 1942. The dark gray paint is almost completely covered with splattered wet mud. When dry, the mud will match local earth in color. [Bundesarchiv]

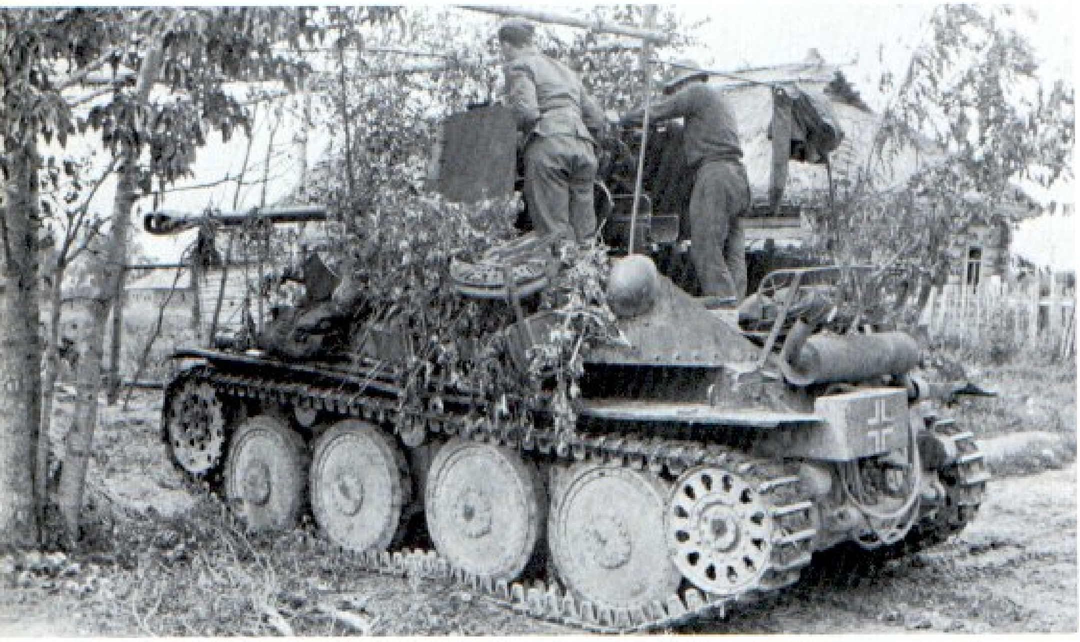


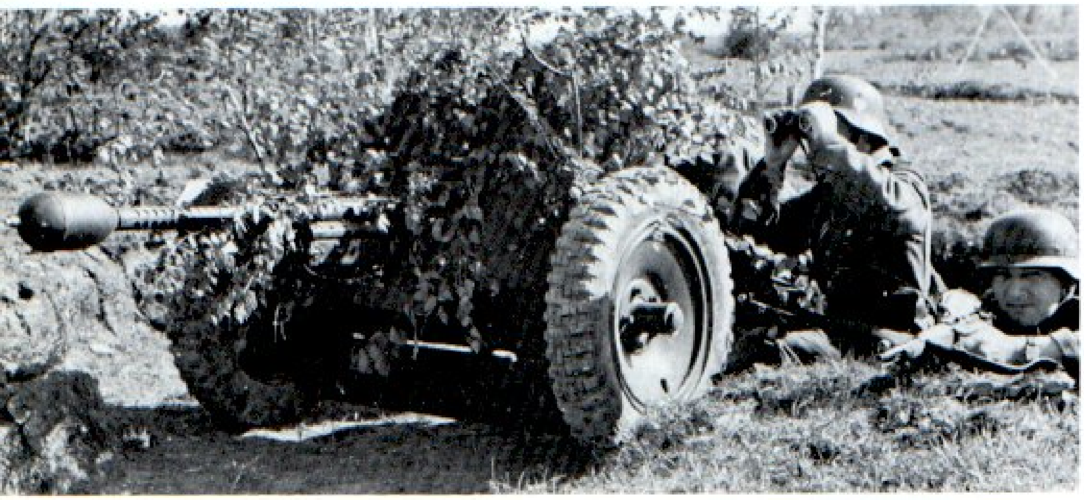
Two Marder III's with all weather canvas covers, are offloaded from a train. They are both dark gray, still clean, with black canvas tops and muzzle covers. Crosses are in white. [Bundesarchiv]



These halftracks, photographed in the summer of 1942, are in overall dark gray, but a heavy layer of sprayed and splattered mud and dust hides the gray almost completely. The lead vehicle is a SdKfz 250/3 radio vehicle. [Bundesarchiv]







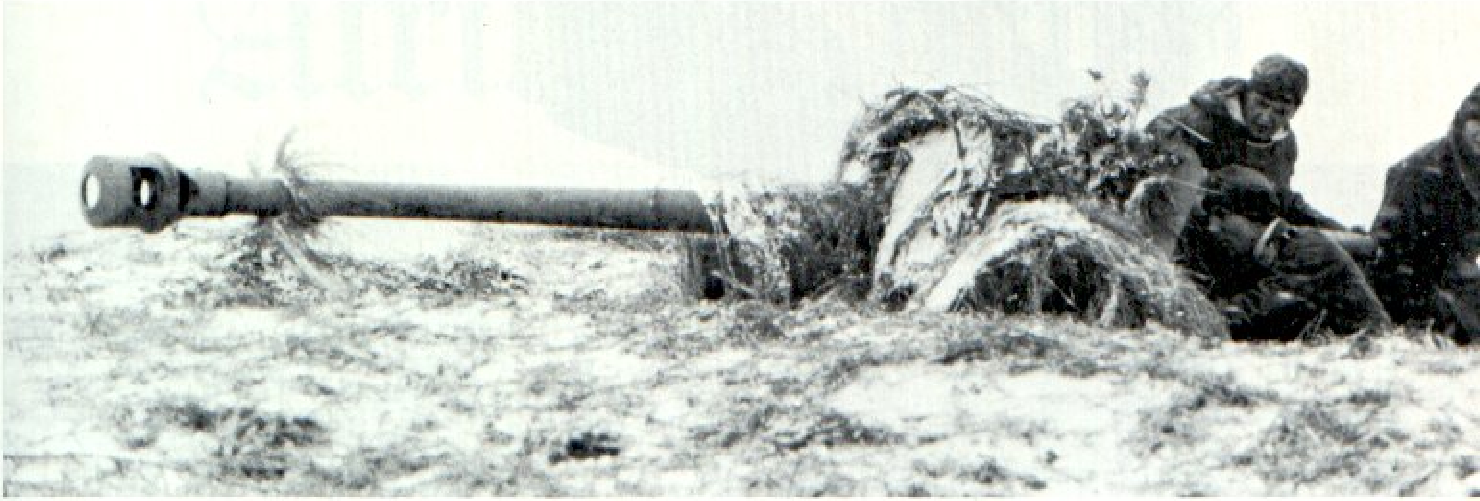
These vehicles show a hastily applied coating of mud, partly brushed and partly smeared in wavy stripes and patches. Dust covering the chassis components has blended with the applied mud and softened it in some areas. [Bundesarchiv]

This Marder III [76.2 mm PAK 36 [r] on PzKpfw 38 [t] chassis] is dark gray with dried mud on the roadwheels. Foliage is used to break up the rather high shape and blend with the nearby trees. [Bundesarchiv]

A 3.7 cm PAK 36 with a shaped-charge "Stielgranate" antitank grenade is in dark gray with foliage fastened to the gun and shield to conceal it better from the enemy. [Bundesarchiv]

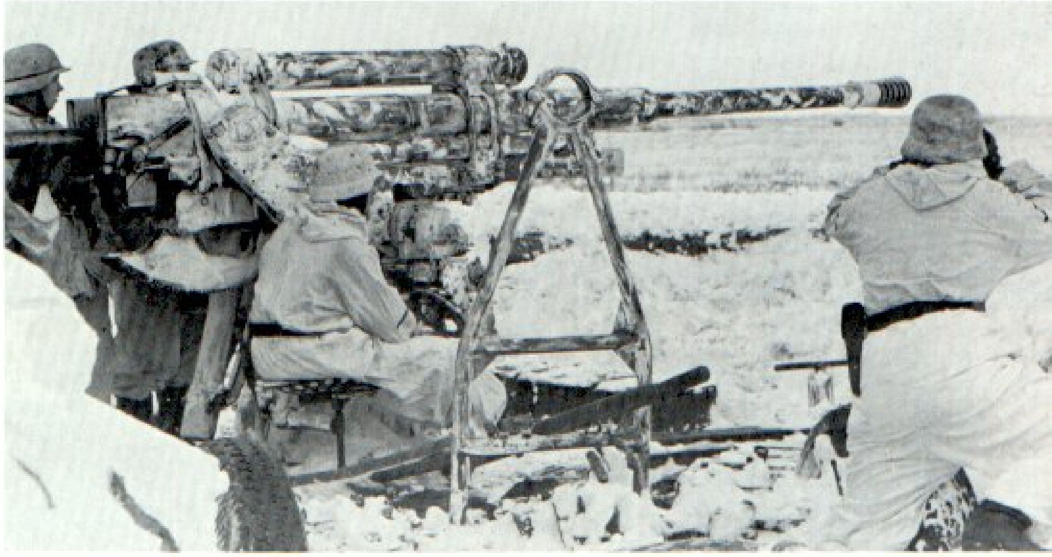
Winter 1942

The winter of 1942/43 was to a large extent as chaotic as the previous one. Again, supplies of the washable white camouflage paste were insufficient, and lime whitewash was a commonly used, if less durable, substitute. Shipment of fuel, ammunition, and replacement vehicles and men were considered more important than paint, and local expedients had to be used until the next spring. A complete change in German camouflage was ahead.

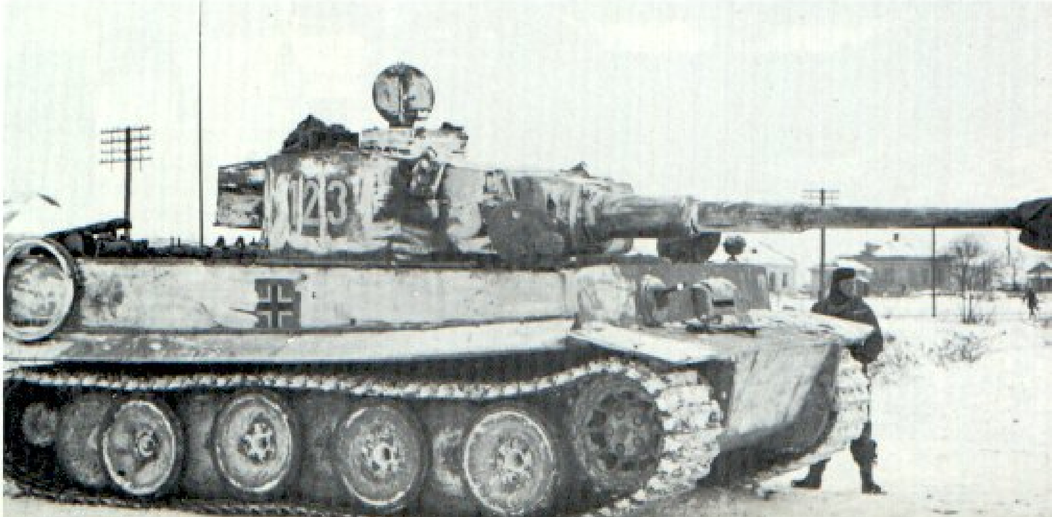


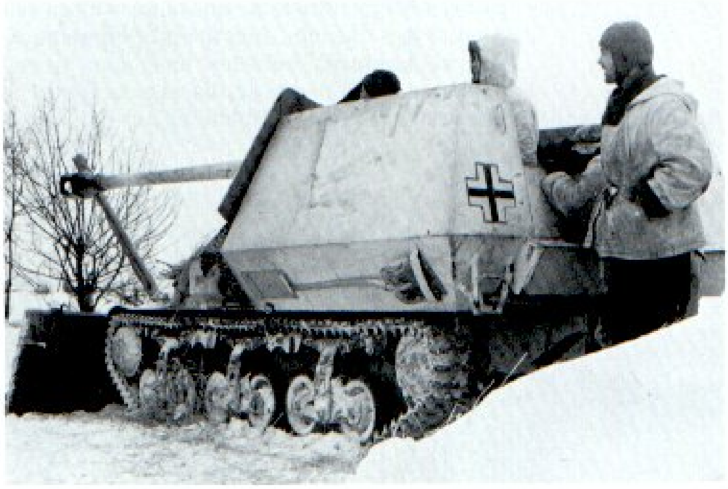
This 7.5 PAK 40 crew has used "natural" camouflage. The grass and straw piled on the gun has held new fallen snow, blending very well with the local fields. This weapon has been emplaced in a ditch to lower the silhouette as much as possible. [Bundesarchiv]

This captured Russian 85 mm antiaircraft gun has been quickly painted with rough stripes in white paint over the dark gray base color. [Bundesarchiv]

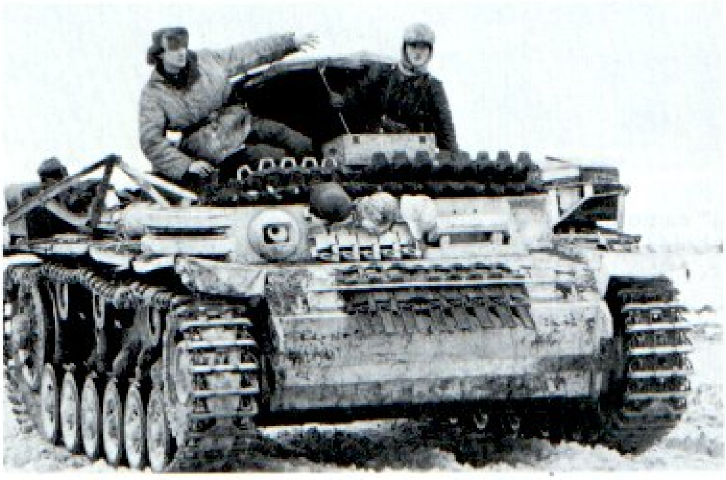


A Tiger I near Leningrad in winter, 1942. The dark gray base is covered with white, roughly applied on the turret though the hull is more evenly done. It was common for the old markings to be left intact, to save repainting them.



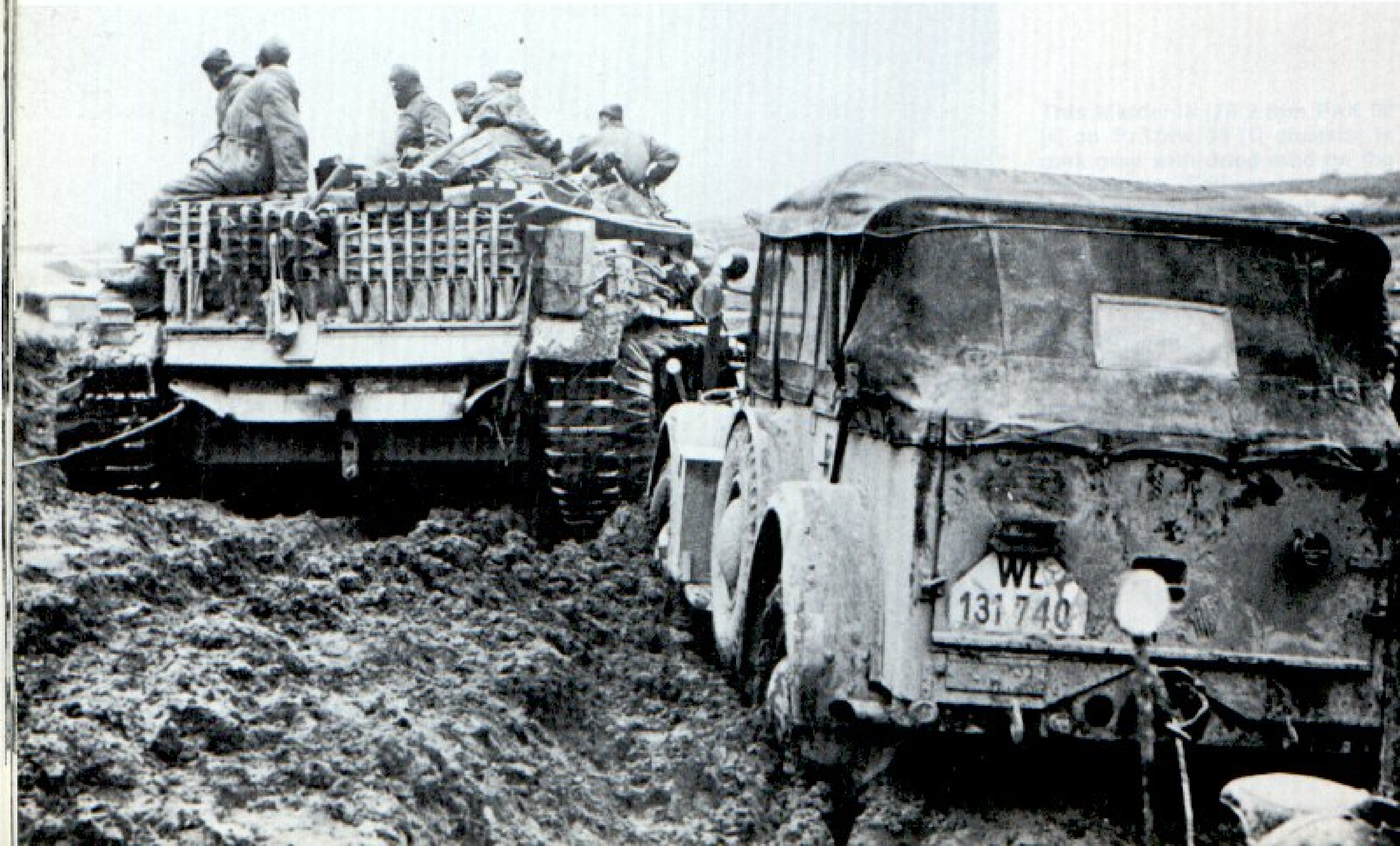


A Marder I [PAK 40 on the French "Lorraine" chassis] seen in a very even application of white paint. Packed snow provides additional camouflage on the wheels and tracks [Bundesarchiv]

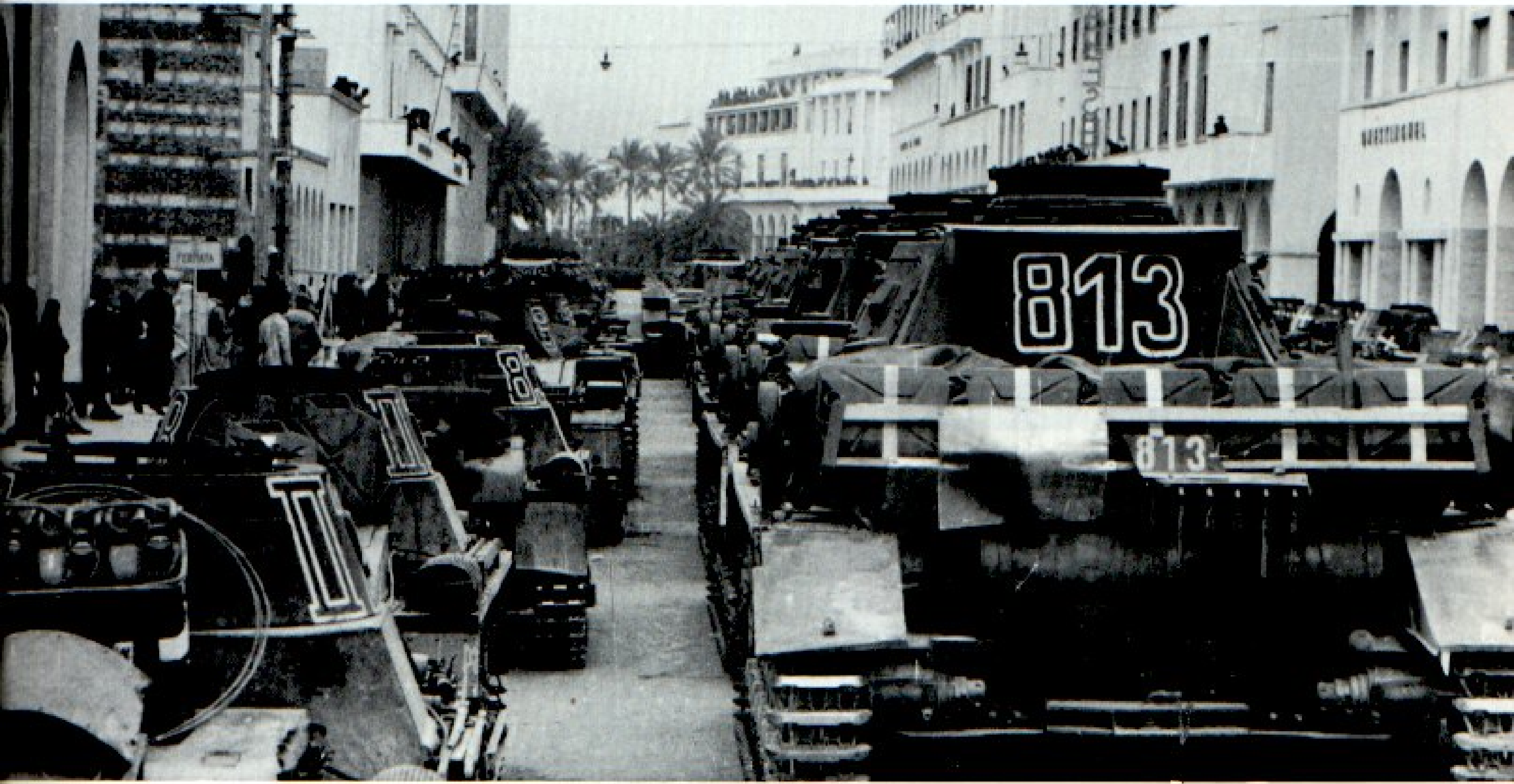


An old PzKpfw III, now used as an ammunition carrier, carries a scruffy but complete coat of white paint. The turret ring is covered by the round tarpaulin, and a great deal of extra tracks and fittings are stowed on the vehicle. The tracks on the bow are "ostketten", the wide tracks designed for use in the poor weather and rough terrain of the Russian front. [Bundesarchiv]

A StuG III ausf F and a Horch Kfz 15 plow through the mud of spring, 1943. The Horch is still overall dark gray, with an even layer of dust - further covered by freshly deposited mud. Note the "ostketten" in use on the StuG III and stowed on the rear.



Deutsches Afrika Korps

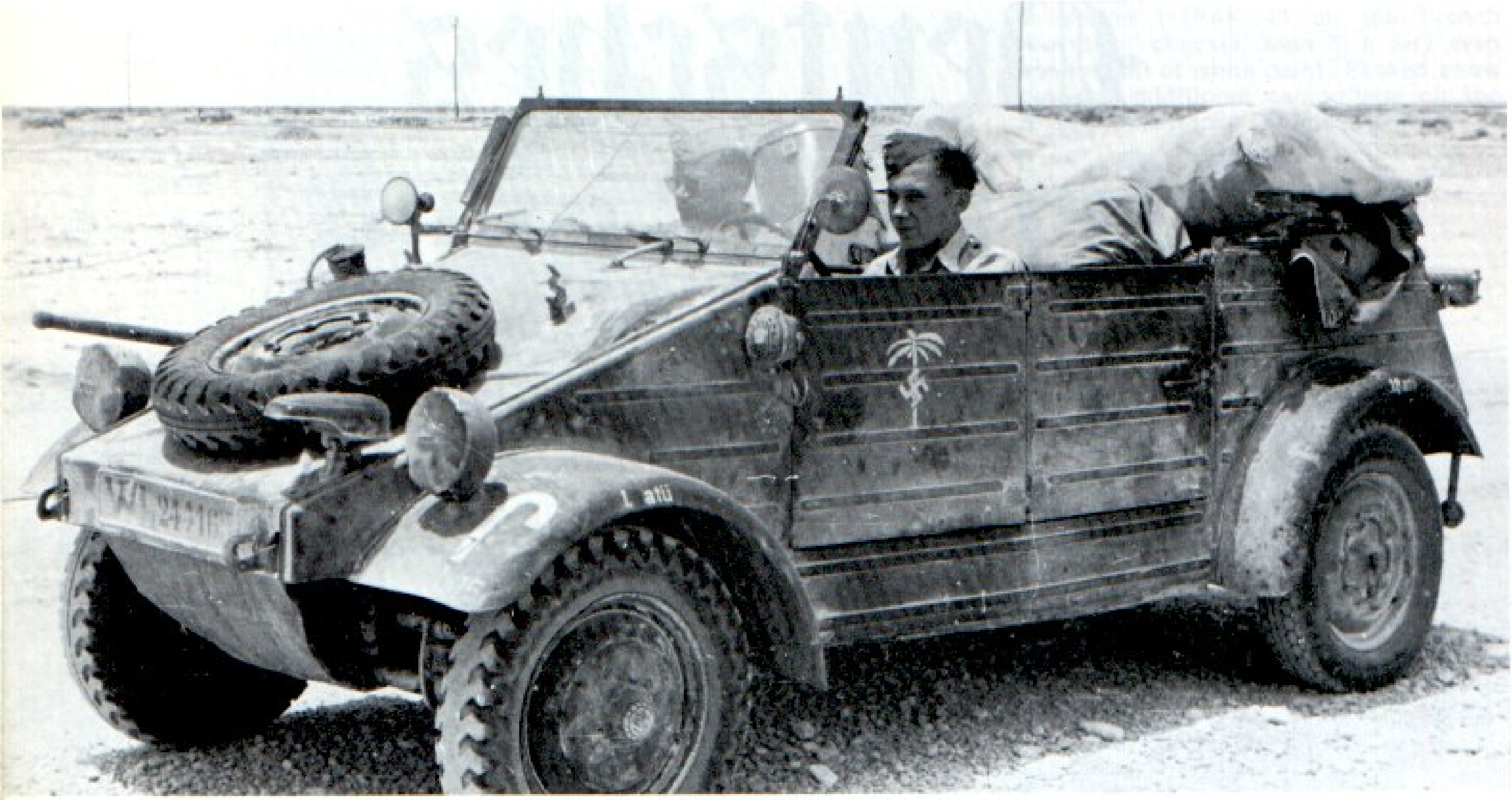


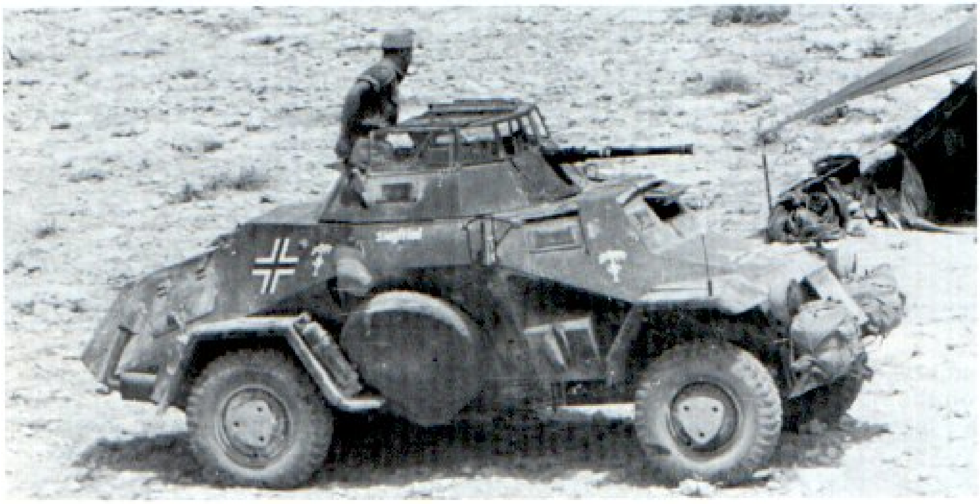
The first armored elements of the embryonic D.A.K. are seen in Tripoli, March 1941. All these vehicles, PzKpfw I's and II's on the left, PzKpfw IV's on the right, are in dark gray. The jerry cans were to be used only for carrying water. Note both large turret numbers in white and the older metal number plate on the rear of the nearest PzKpfw IV ausf D.

North Africa 1941-1943

Mussolini's attempt to re-establish an African empire for Italy had, by late 1940, resulted in nearly total defeat at the hands of the British with the very real danger that Italy would be driven out of North Africa. Hitler determined to maintain this theatre of operations in order to keep the British fighting, and thus commit men and material to Africa that might otherwise be held for action in England or Europe. Out of this determination was formed one of the most famous military units in history - the Deutsches Afrika Korps.

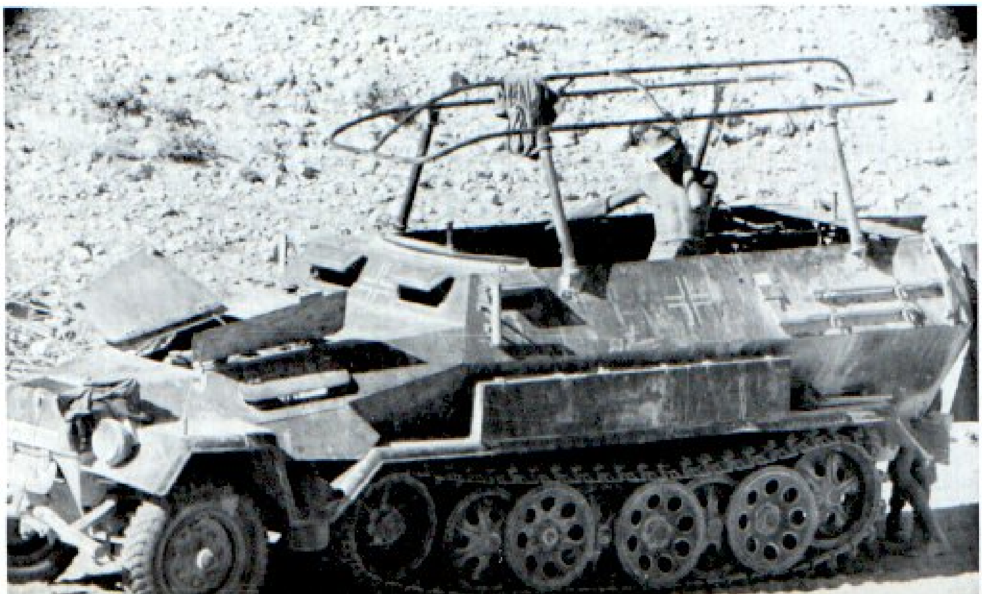
The rush to form an expeditionary force, coupled with the fact that no tropical colors had yet been standardized in February, 1941, resulted in the arrival of overall dark gray vehicles in the first shipments to North Africa. Because Erwin Rommel, the commander of the Afrika Korps, insisted on attacking the British 8th Army as soon as possible, the initial battles fought across the face of Libya involved German vehicles painted in overall dark gray. It was found that in the desert large amounts of dust were immediately deposited on the vehicles and equipment which reduced the color contrast between the dark gray and the desert terrain. A common method of covering completely the original dark gray paint was the thorough application of a coat of mud. A thick soupy slurry of mud was mixed in buckets and pans and applied with hands, sponges, rags, brushes, etc.; when dry, the mud coating was just as effective as a coat of paint. Indeed, in many photographs, it is difficult to tell the difference between paint and mud, it is however very apparent from numerous photographs that large numbers of D.A.K. vehicles were camouflaged with mud, and that this was a "standard" field expedient practice.





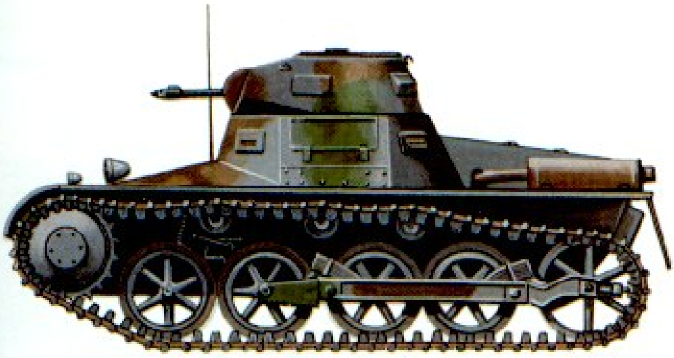
A dusty VW Kubelwagen sports an Afrika palm tree symbol, which was used on all vehicles under the control of the D.A.K. This is a Luftwaffe vehicle. [Bundesarchiv]

"Siegfried", a mid-production SdKfz 222 armored car, is in dark gray. Dust has been deposited on the front, and two Afrika palms are painted on the side. [Bundesarchiv]

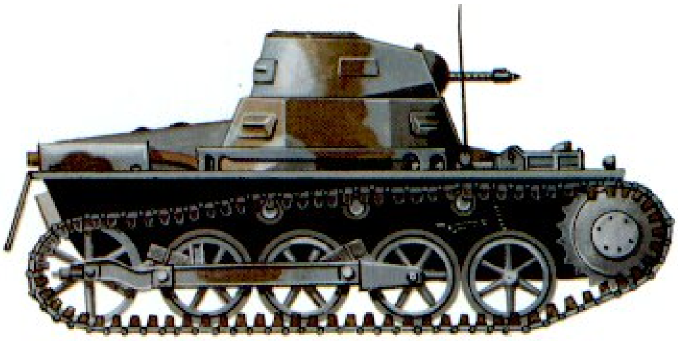


This SdKfz 251/3 ausf B in overall dark gray shows accumulations of dust on upper surfaces and the rear sides of the body. The engine hatches are all open for better ventilation. [Bundesarchiv]

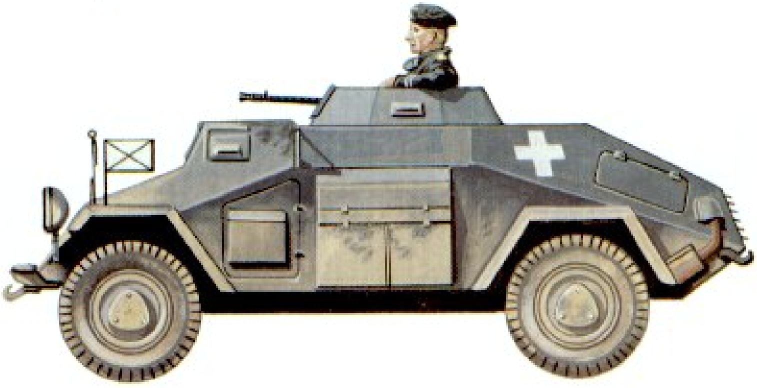
Pre-War and Polish Campaign 1934-1939



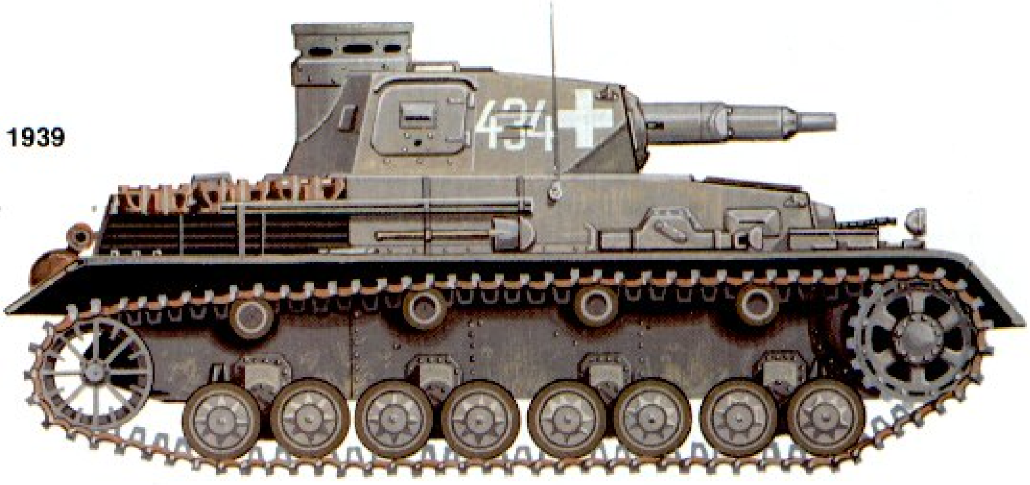
PzKpfw I ausf A, Nürnberg 1934
Reichwehr Grey with Olive Green and Red Brown



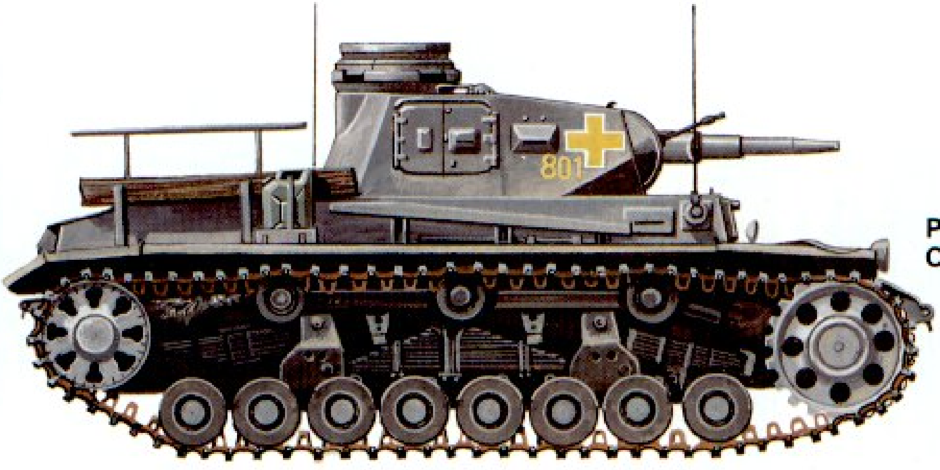
Pzkpfw I ausf A, Germany 1935
Dark Grey with Dark Brown



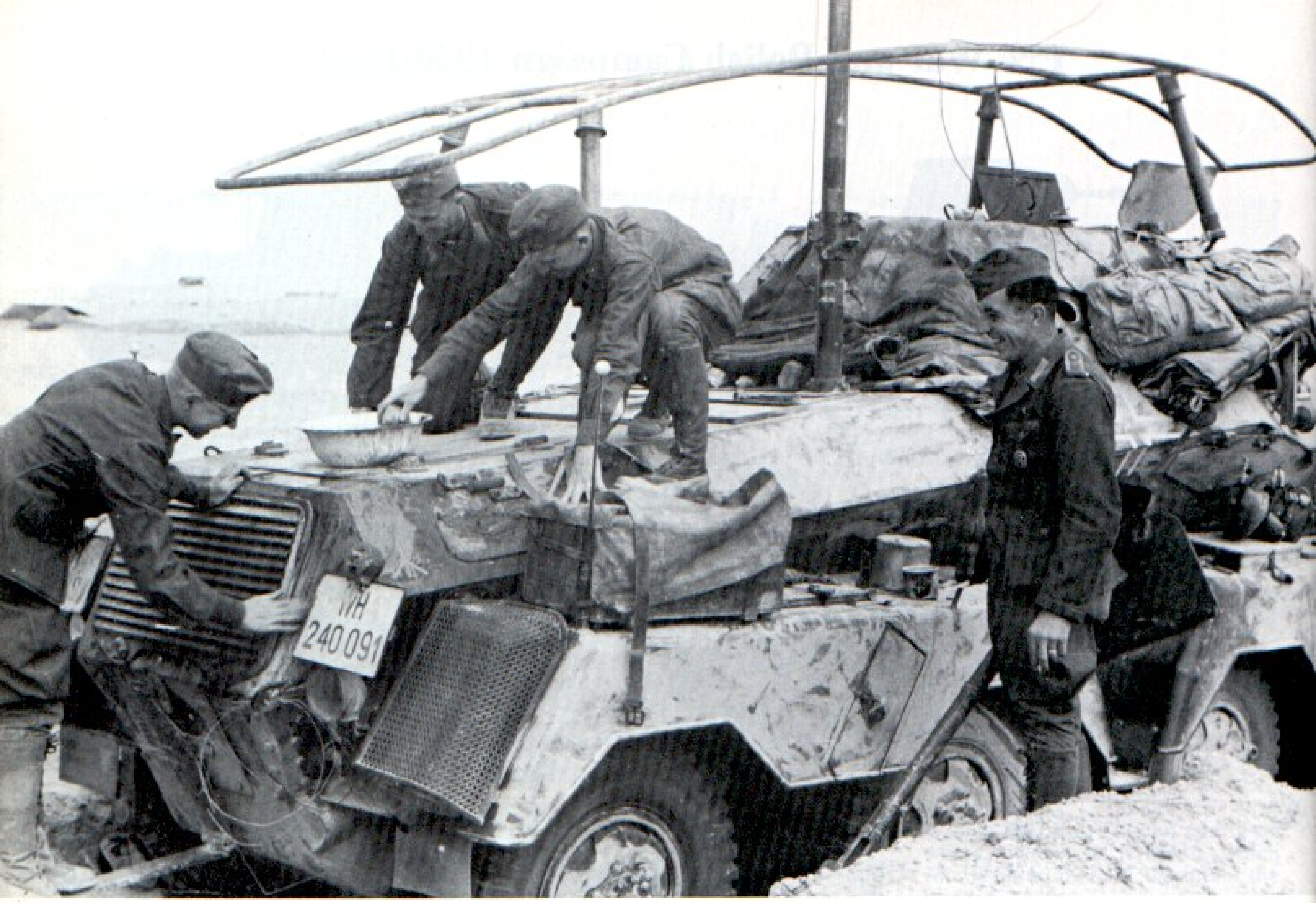
SdKfz 221, Poland 1939
Overall Dark Grey
with heavy coat of dust



PzKpfw IV ausf A, Poland 1939
Overall Dark Grey



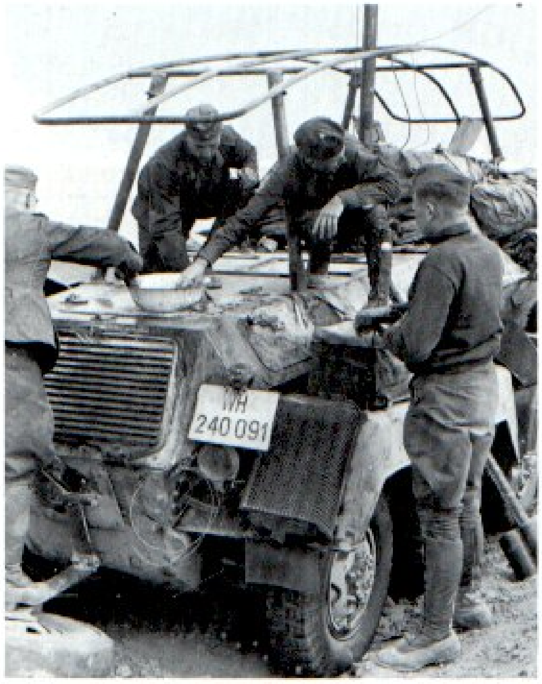
PzKpfw III ausf D, Poland 1939
Overall Dark Grey

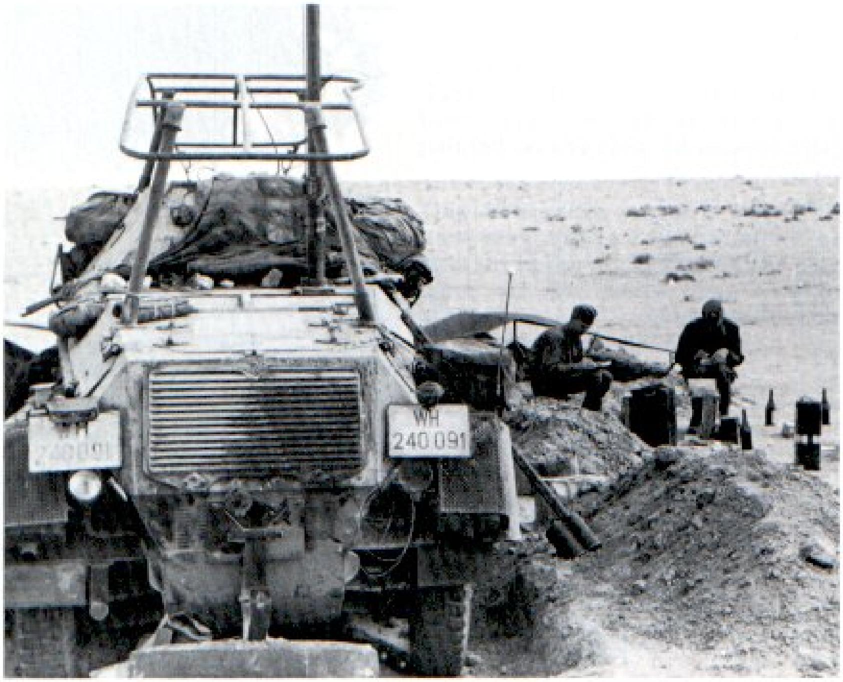


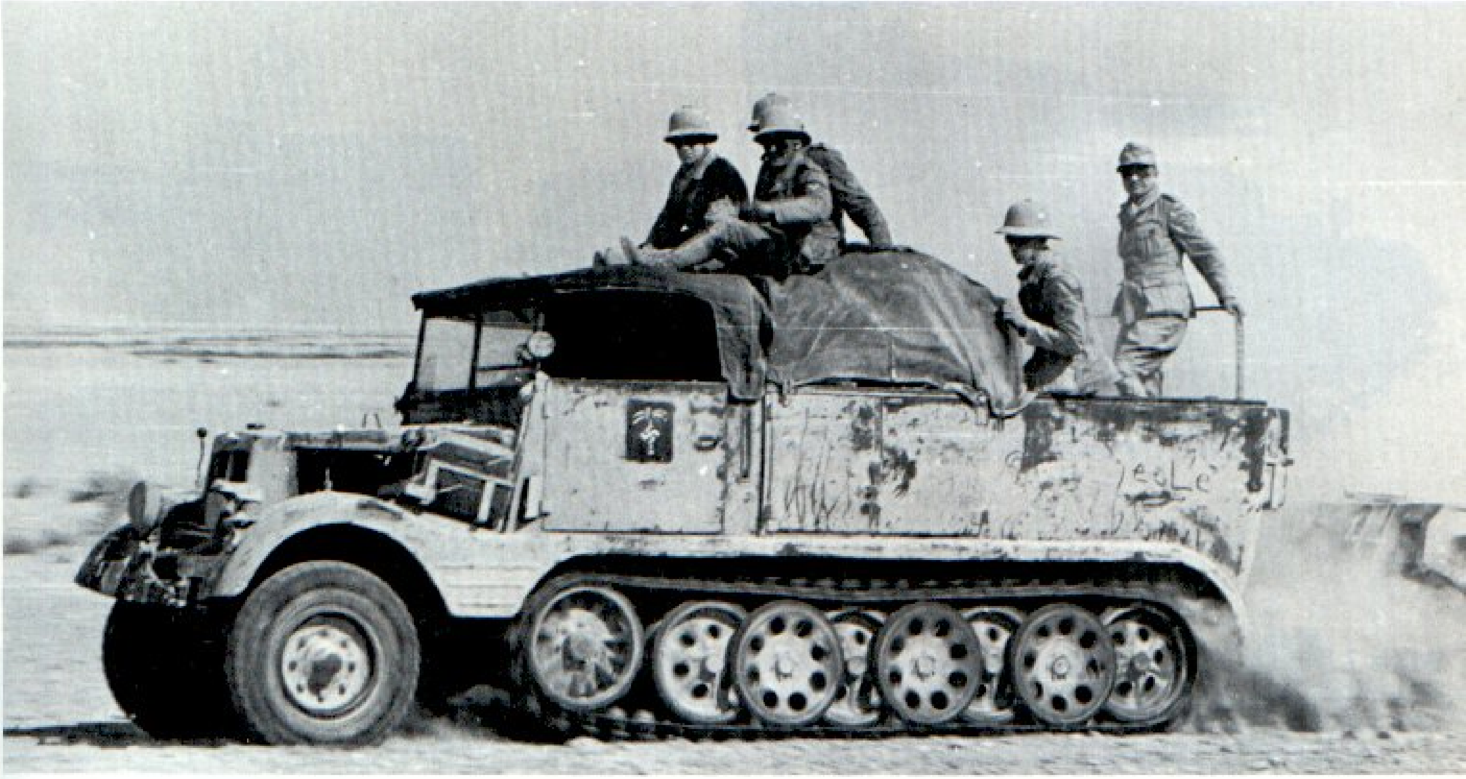
The crew of this SdKfz 263 armored car applies soupy mud to the rear deck and sides. When dry, the mud will match the rest of the vehicle, already covered with mud.

Finishing up the job, sponges and hands are used to spread and smooth the mud coating evenly. It was common practice to use mud on all the vehicle surfaces.

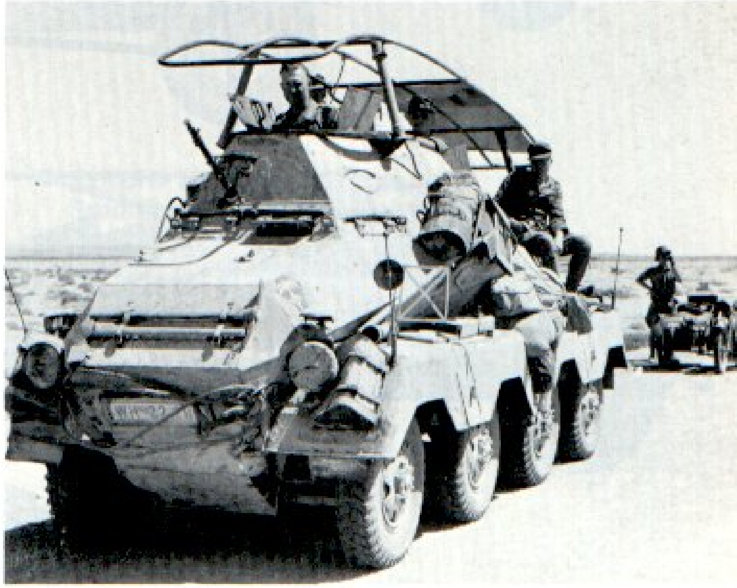
"240091" after the "mud pack" is dry. The color matches the surrounding sand exactly. Though not as durable as paint, mud could be reapplied more easily.





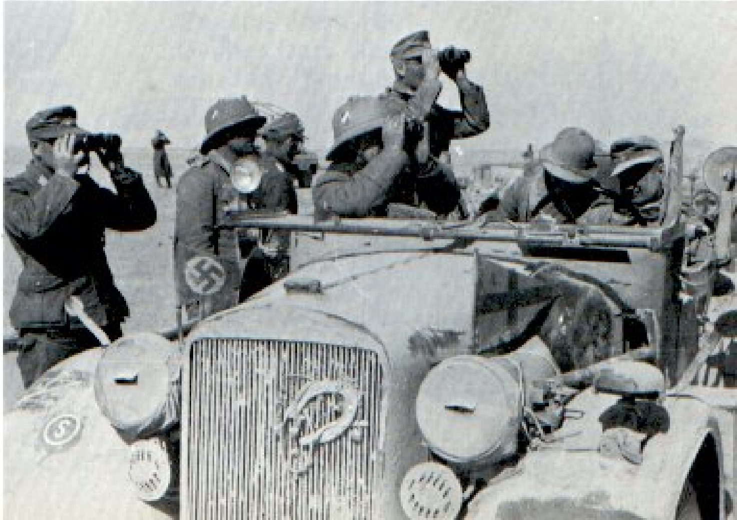


A SdKfz 11 3-ton tractor shows the effects of rubbing away some of the mud coating. Dark spots and streaks like these are a telltale sign that the vehicle has been daubed with mud, not paint.

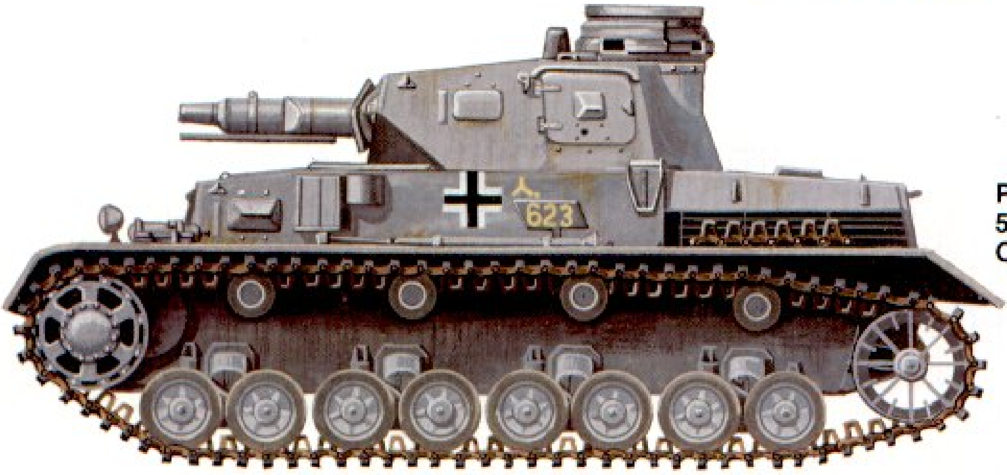


The SdKfz 263 radio car has a solid coat of mud. The Afrika palm has been left with a very narrow border of the dark gray base color. Like most vehicles in the desert, this example carries a great deal of extra stowage. A sunshade tarpaulin has been stretched over the radio antenna. [Bundesarchiv]

This Horch Kfz 15 has an even coat of mud, which has been worn away from the rear fender by men leaving the car. Scuff marks on other sections expose the dark gray paint. Note the insignia which have been left on a background of dark gray. A wash basin is carried just behind the pennant.

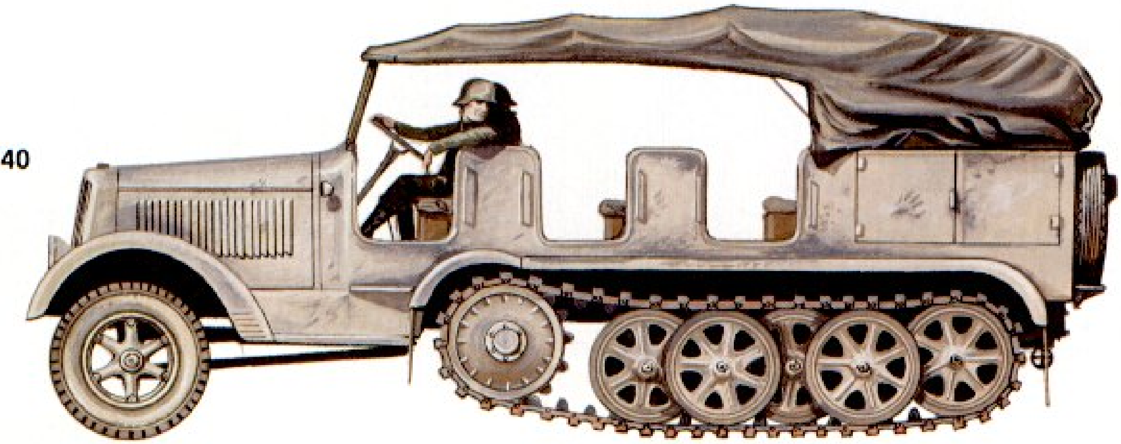


French Campaign 1940

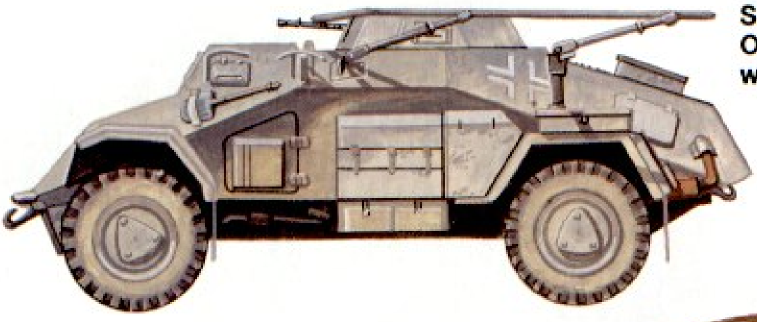


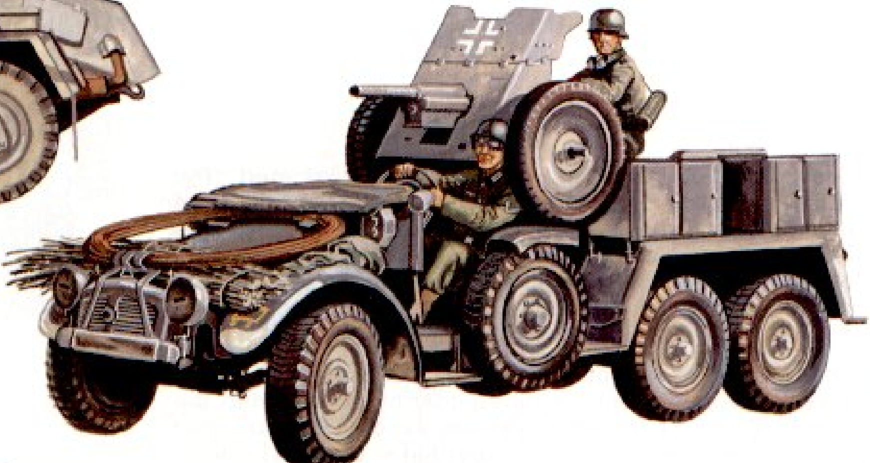
PzKpfw IV ausf D
5th Panzer Division, France 1940
Overall Dark Grey

SdKfz 7 [Km 9], France 1940
Overall Dark Grey
with solid coat of dust

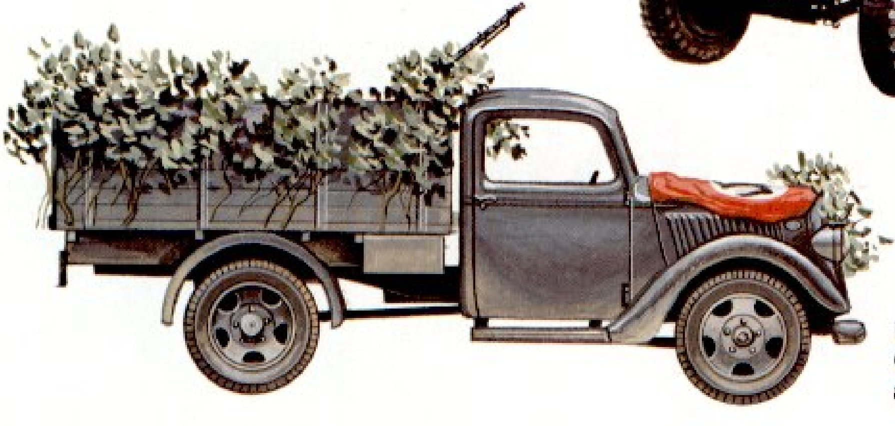


SdKfz 223, Russia 1941
Overall Dark Grey
with coat of dust



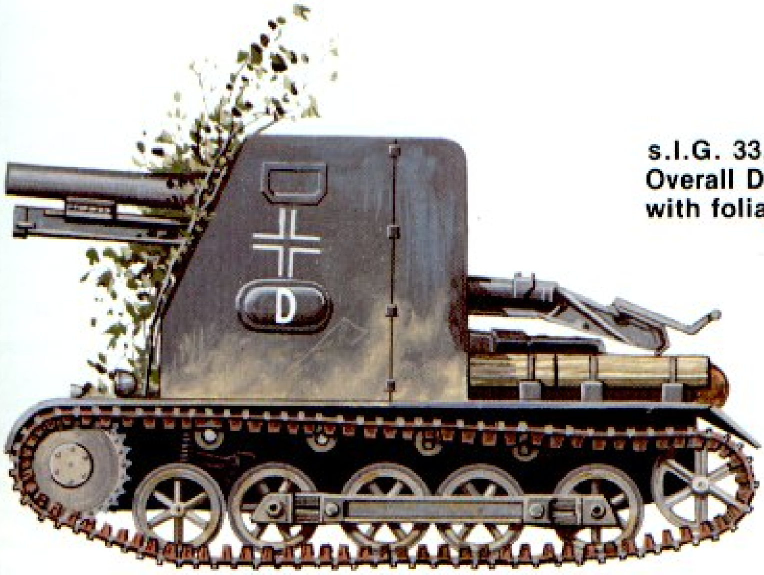


Kfz 69 [Krupp L2H143] with 37mm Pak 36,
France 1940
Overall Dark Grey
with light coat of dust



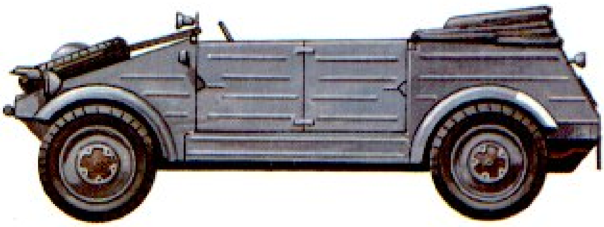
Light Truck, France 1940
Overall Dark Grey, foliage
and national flag on hood

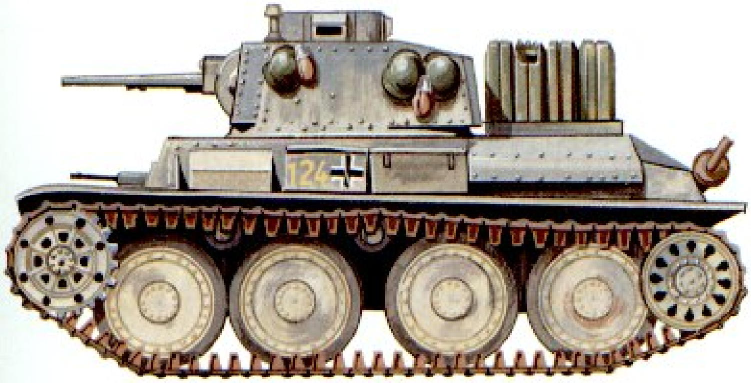
French and Russian Campaigns 1940-1941



s.I.G. 33, France 1940
Overall Dark Grey
with foliage and light coat of dust

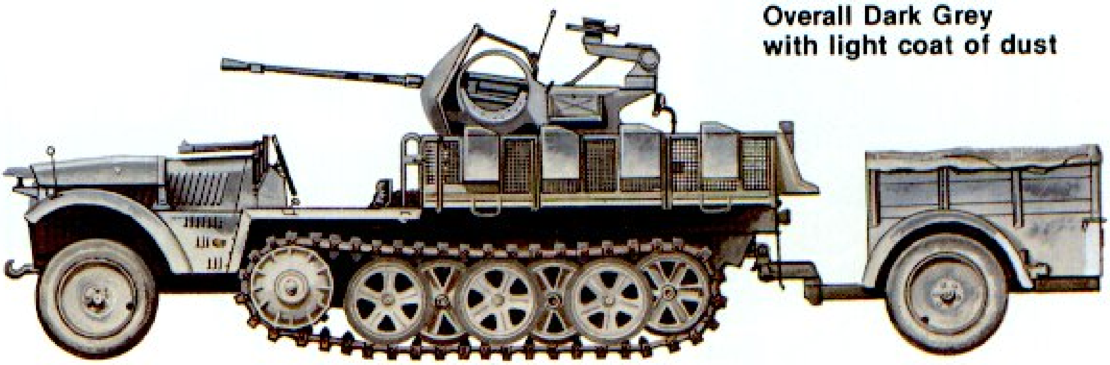
Kfz 2 [VW Kubelwagen],
Grossdeutschland PzG. Div.
Russia, June 1941
Overall Dark Grey

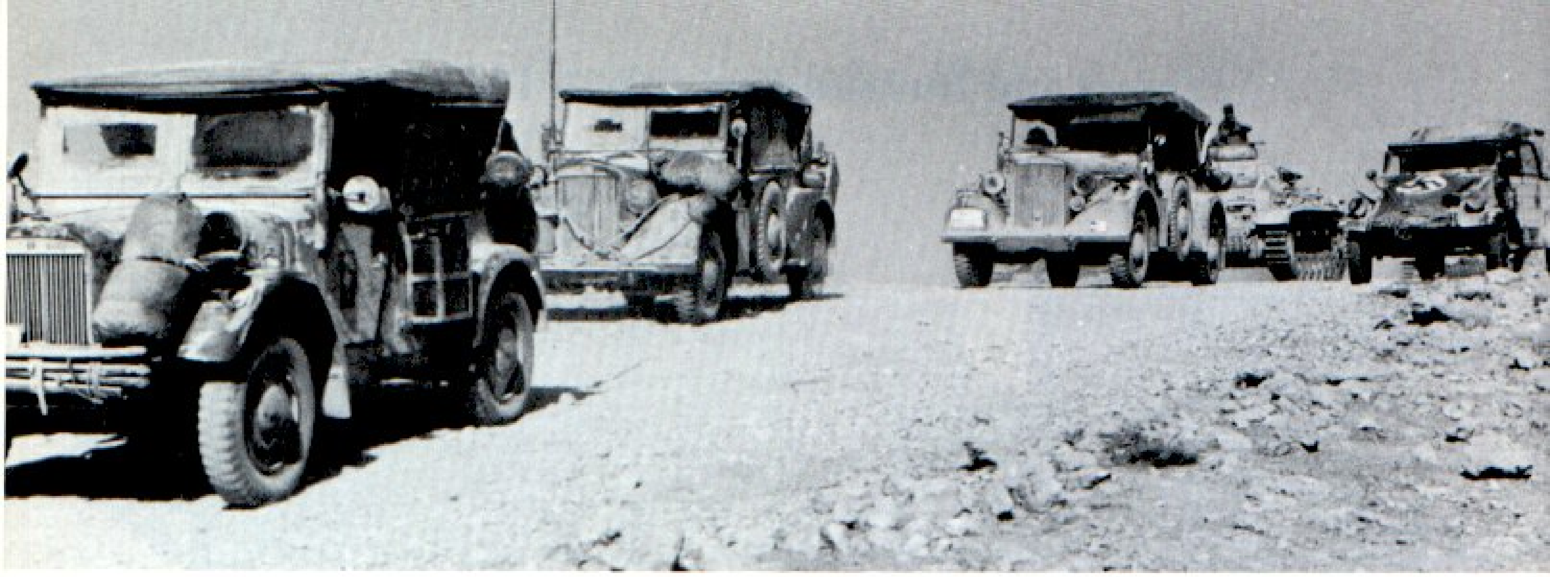




PzKpfw 38[T],
Smolensk, Russia, October 1941
Overall Dark Grey
with heavy dust coat on wheels

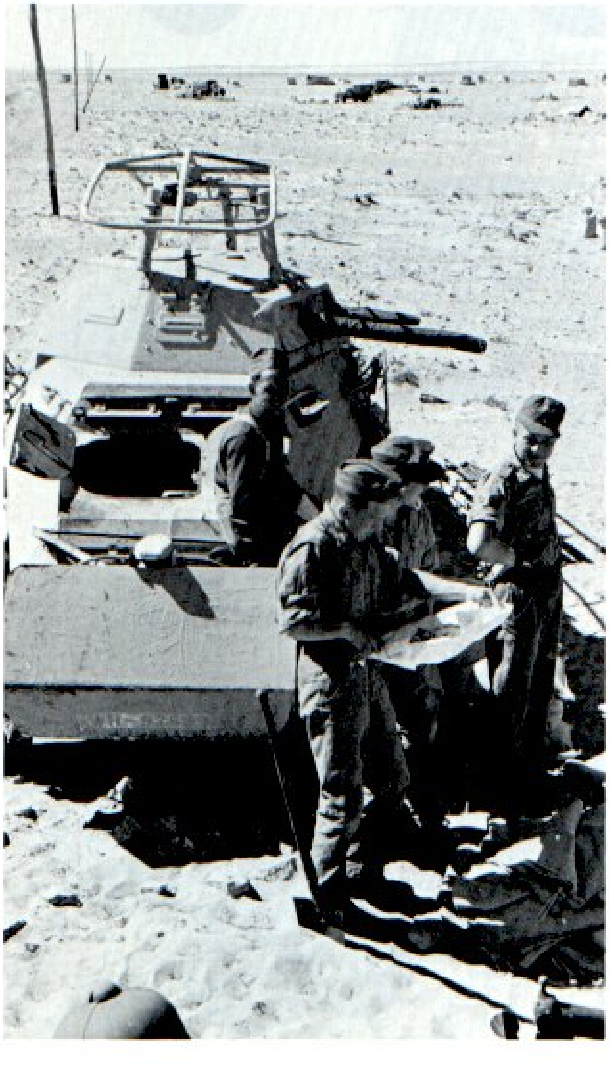
SdKfz 10/5 with 20mm Flak 38,
Russia, June 1941
Overall Dark Grey
with light coat of dust



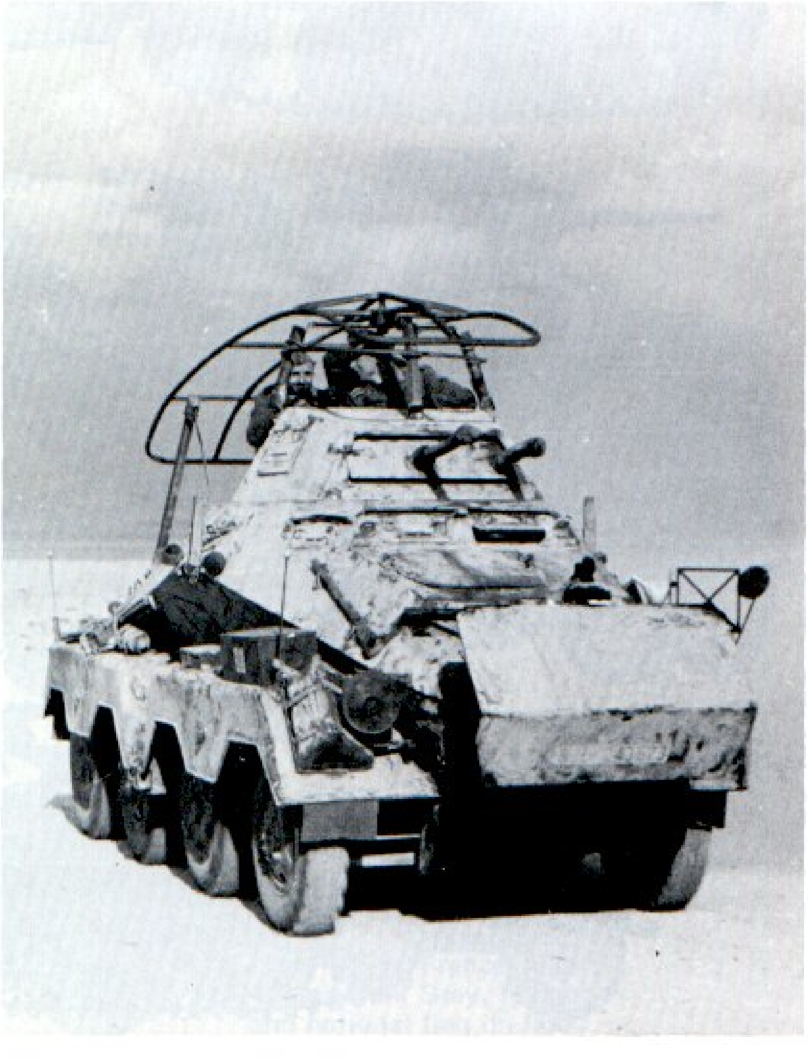


This column of passenger cars, a Kfz 4, 2 Kfz 15's and a Kfz 2 Kubelwagen, are all dark gray with a mud coat. The finish is wearing off the lead vehicle. The windshields of several of the vehicles have been painted with mud to reduce glare from the sun. Dust has settled on the canvas tops, which have not been coated. Mud didn't stay on canvas very long if the cloth folded or moved. Stretched canvas [tire covers, headlight slit covers] held mud coatings much longer, however.

This SdKfz 232 [8 rad] shows the textured pattern on the spaced armor caused by the application of mud. This thick coating generally resulted in a rougher coat than paint.



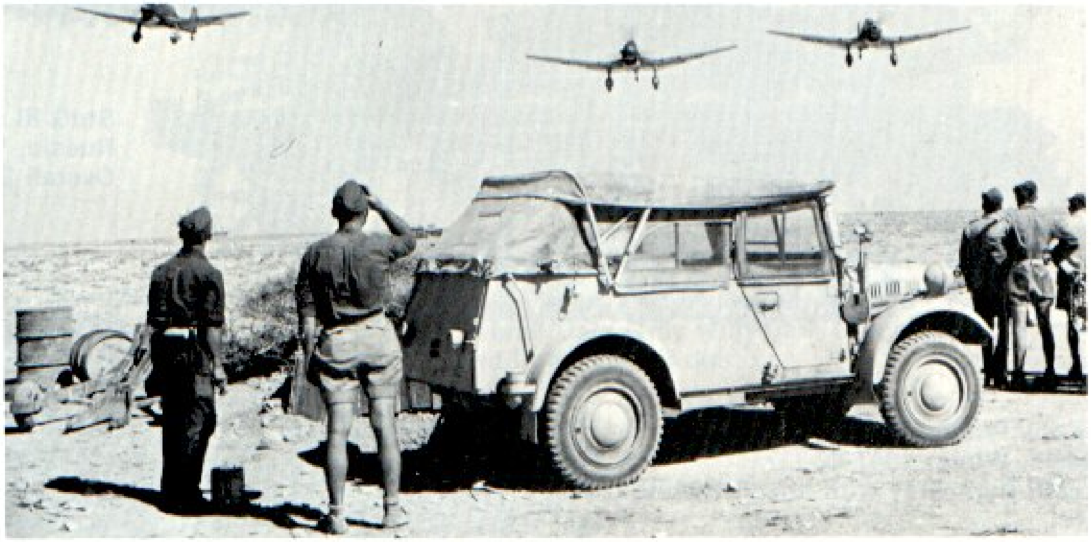
A SdKfz 232 [8 rad] with a worn mud coat travels down a dusty road in the Libyan desert. The radio antenna has not been painted with mud. As is the case with many mud-coated vehicles, no markings are evident.



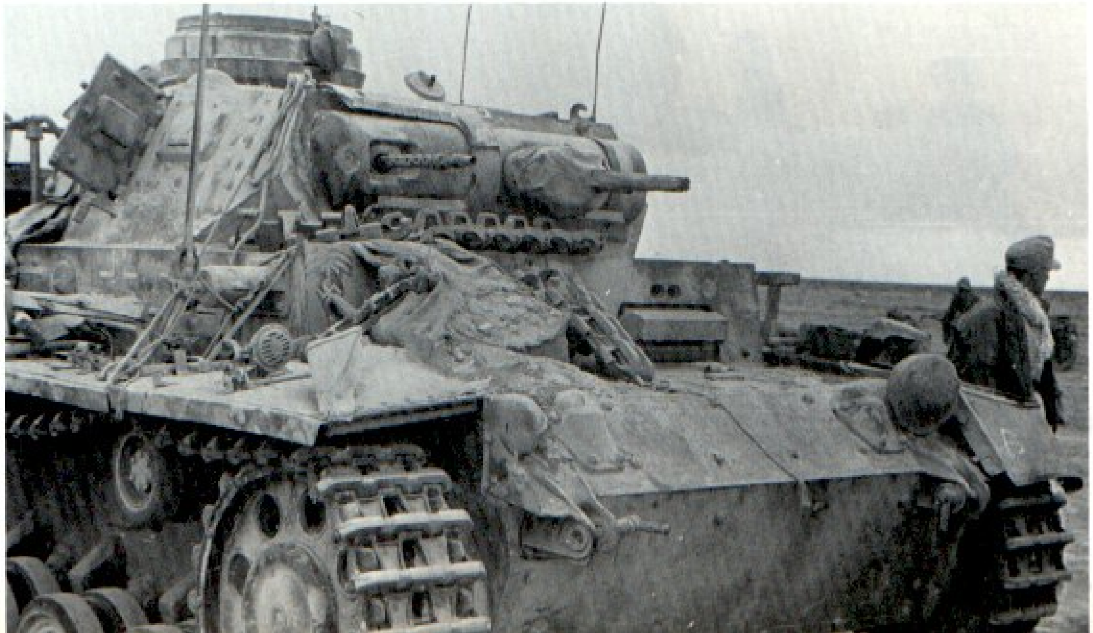
HM 1941, no. 281, dated March 17, 1941, directed that in place of the dark gray color, all vehicles and equipment used by forces in Africa were to be painted in a base color of yellow brown (RAL 8000) with gray green (RAL 7008) used for mottling and camouflage patterns. As with the early war scheme of dark grey/dark earth, the yellow brown was to cover ⅔ of the vehicle or equipment, and the gray green to cover the remaining ⅓. Both colors were matte. Colors were to be blended or feathered at the edges without sharply defined areas, and small parts and wheels could be painted in one color.

It should be noted that because of the lack of preparation, the long supply lines to Africa, and the higher priorities assigned to weapons, fuel, and ammunition, supplies of the new paint were limited and many deviations were to be found among DAK vehicles. One kleiner Befehlspanzer I captured by the British was overall gray green. In order to break up the silhouettes of the vehicles and stretch the meager paint stocks, the Germans painted many vehicles utilizing the original dark gray as the base coat, the yellow brown being sprayed as a heavy mottle, in patches, or irregular lines, to cover as much of the old finish as was desired. To save time and paint, markings on the dark gray vehicles were often masked during this repainting, leaving patches of dark gray around these protected insignia. On many open vehicles, only the exterior was repainted at first, and the interiors were left dark gray until thorough repainting was needed.

The North African desert was perhaps the harshest climate encountered by the Germans as far as deterioration of paint finishes was concerned. The bright sunlight and dry heat combined to cause serious premature deterioration of the paint. Bleaching was the most common problem, as within several months vehicles often were near-white, and this compromised the camouflage. Chalking, cracking, blistering, and peeling were also problems, as these hastened the destruction of the paint schemes. Ironically, with the greater supply difficulties in North Africa, the need for adequate amounts of paint was more acute, primarily for camouflage protection, due to the harsh climate. Severe rust and corrosion were not as much of a problem as in Europe, but the sandstorms that appeared in the Libyan desert could strip the paint off a vehicle in a few hours. Bare metal acquired a fine surface coating of powdery brown rust, which again compromised the camouflage function of the paint. It is probable, therefore, that in those cases in which British paints of appropriate sand shades were captured, they were used to paint German equipment, alleviating to some extent the chronic shortage of paints. Use of Italian or Luftwaffe paints was probably not as widespread as believed, since these units had their own supply problems. As was the case with British vehicles in Libya, the majority of German equipment in Africa soon had a scruffy appearance - rough, chalky paint covered with layers of dust.

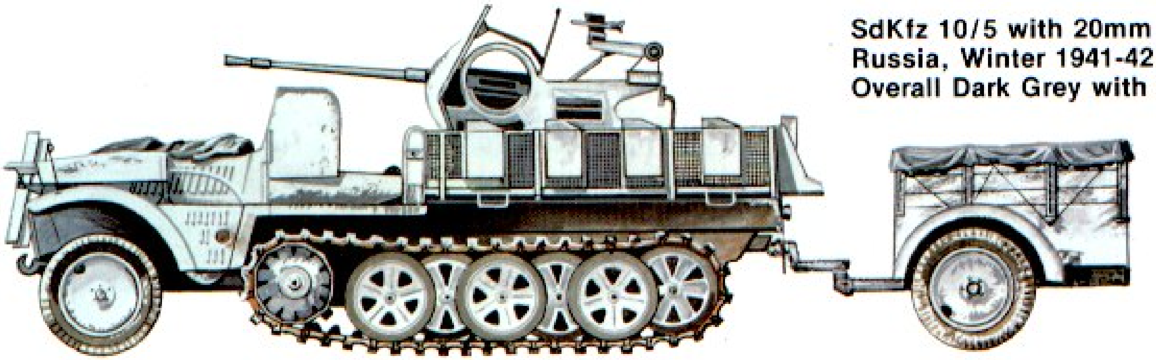


A "kette" of Ju 87B's flies over a newly repainted Stower Kfz 4 le.E.Pkw. The vehicle is overall yellow brown, with a white stripe across the hood as an aerial recognition symbol. The top hasn't been painted, but is very dusty.

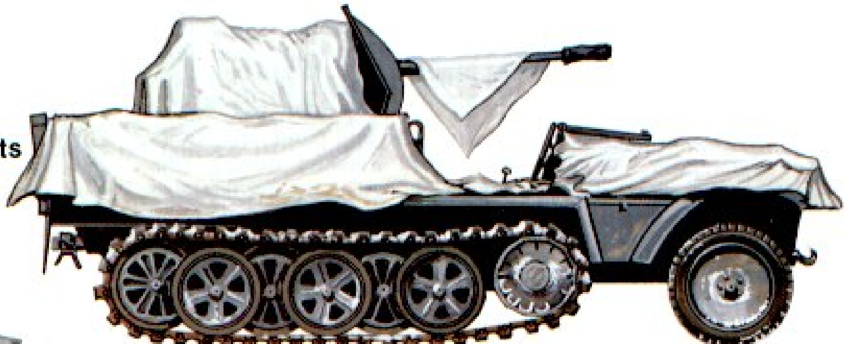


A PzKpfw III command tank shows the application of yellow brown paint in a grid pattern over the dark gray paint on the turret. The hull has a more even, smeared coat of the yellow paint. This is a vehicle in the 21st Panzer Division.

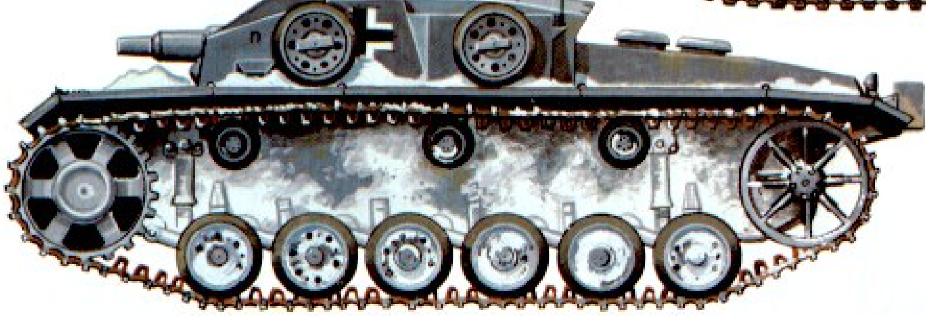
Russian Campaign, Winter 1941-1942



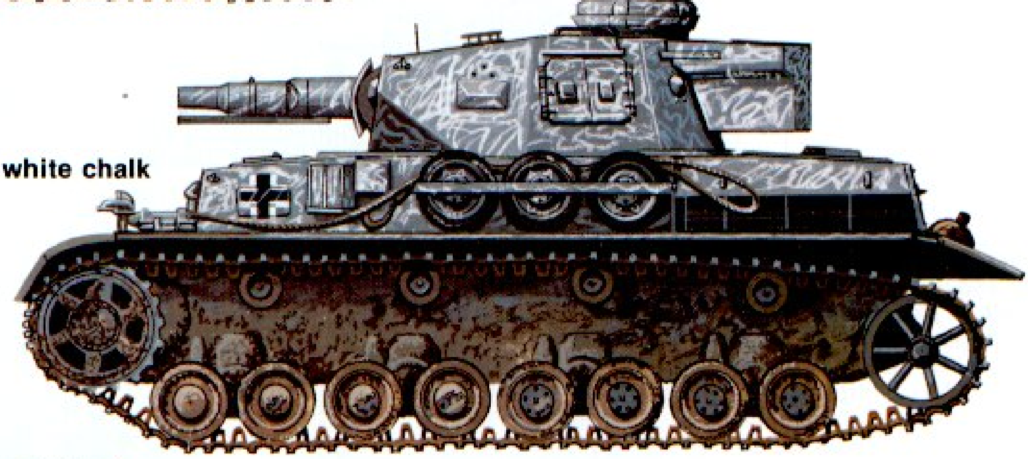
SdKfz 10/5 with 20mm Flak 38,
Russia, Winter 1941-42
Overall Dark Grey with white paint



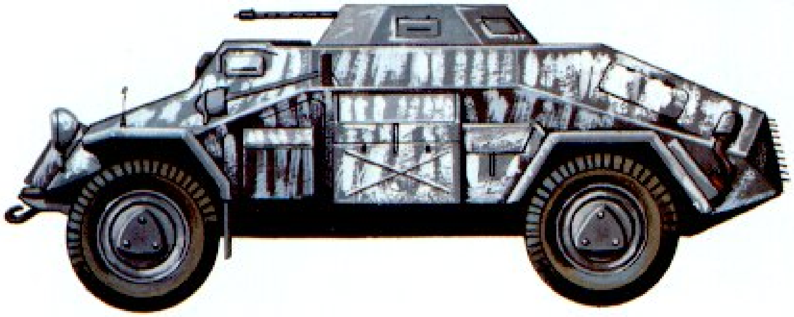
SdKfz 10/4 with 20mm Flak 30,
Russia, Winter 1941-42
Overall Dark Grey covered with white sheets



StuG III ausf D,
Russia, Winter 1941-42
Overall Dark Grey with snow build-up

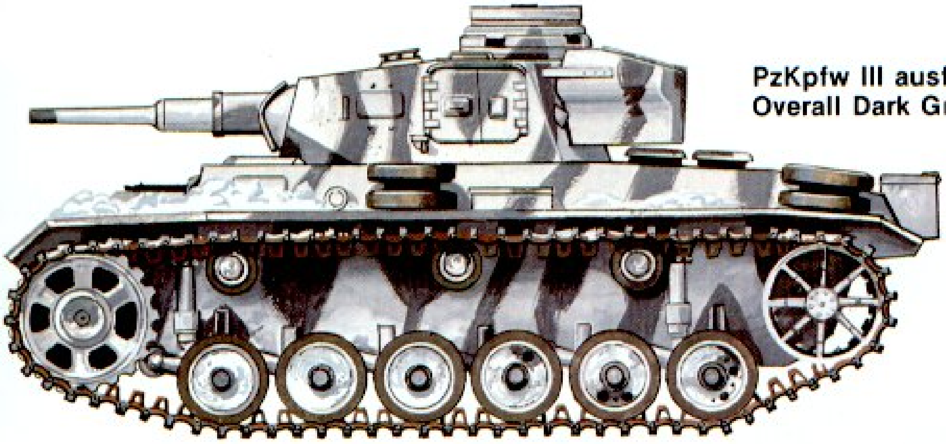


PzKpfw IV ausf F1,
Russia, Winter 1941-42
Overall Dark Grey with lines of white chalk

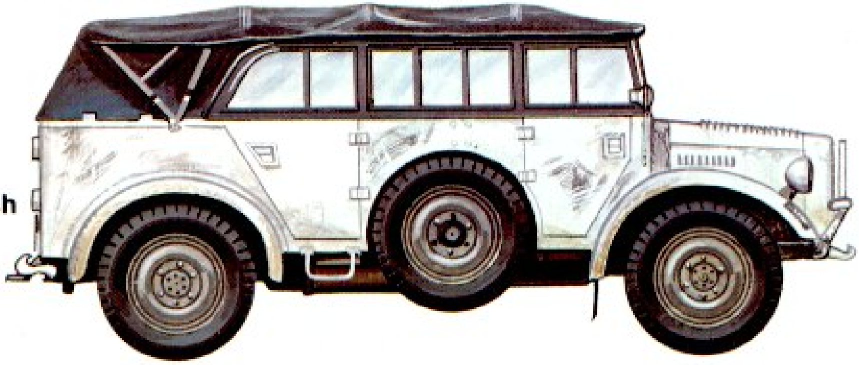


SdKfz 221, Russia, Winter 1941-42
Overall Dark Grey with whitewash stripes

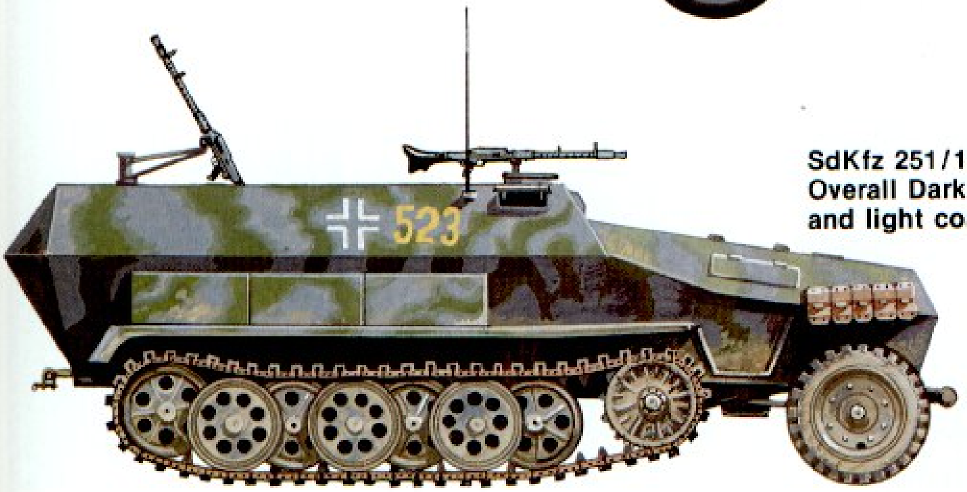
Russian Campaign, Winter and Spring 1941-1942



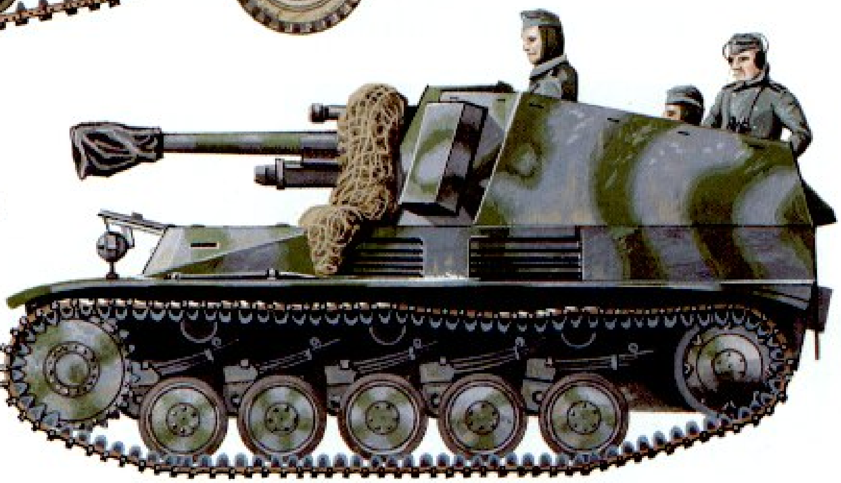
PzKpfw III ausf J, Russia, Winter 1941-42
Overall Dark Grey with bands of whitewash



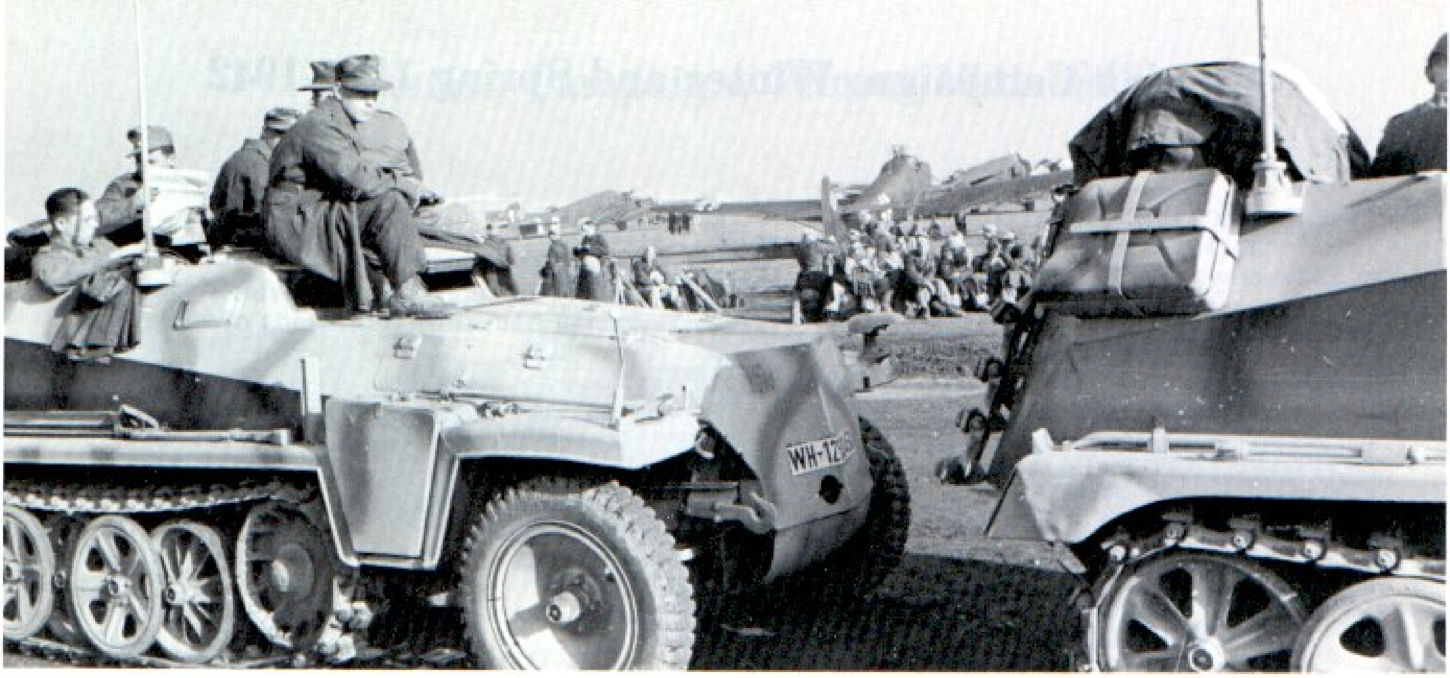
Kfz 69 Horch s.E.Pkw,
Russia, Winter 1941-42
Overall Dark Grey with coat of whitewash

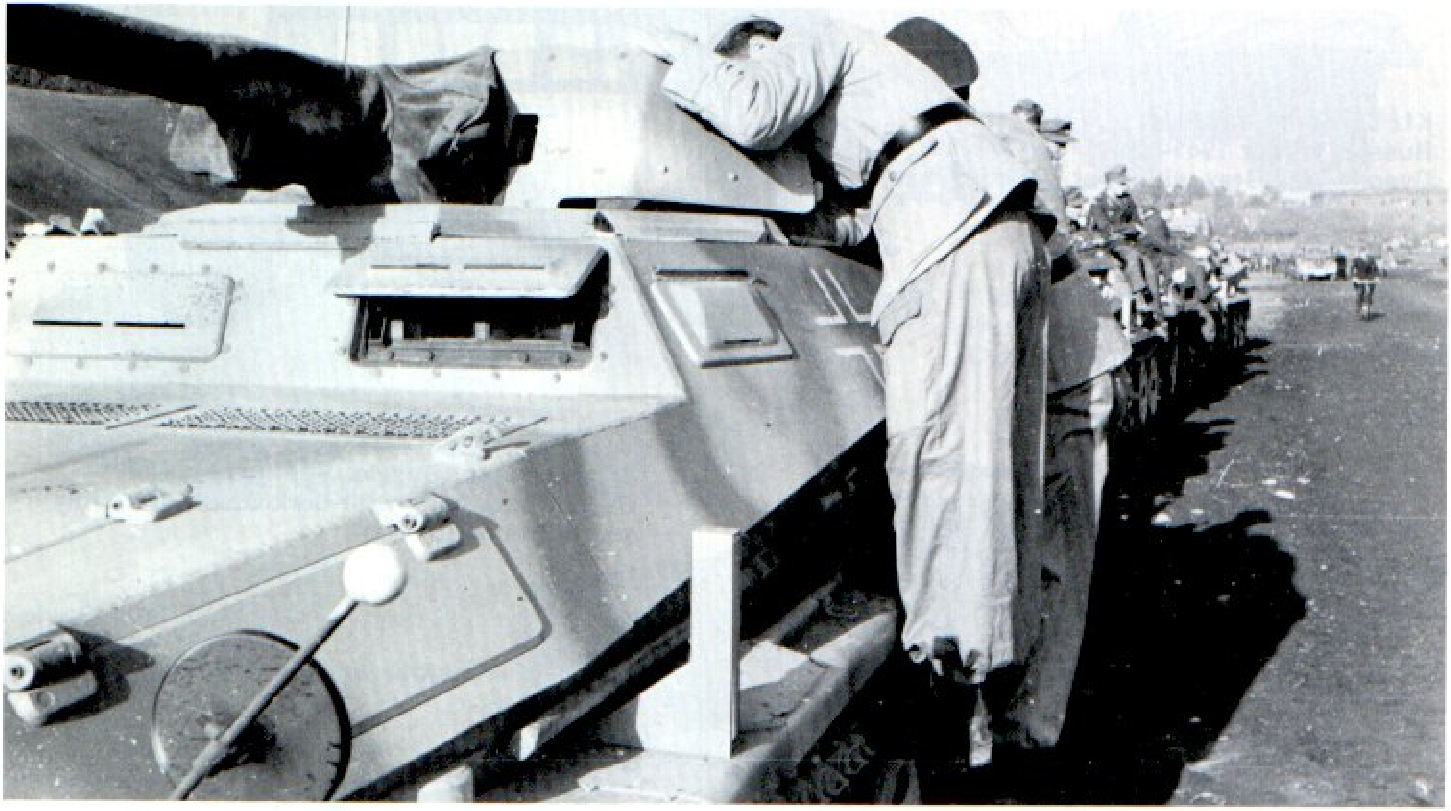


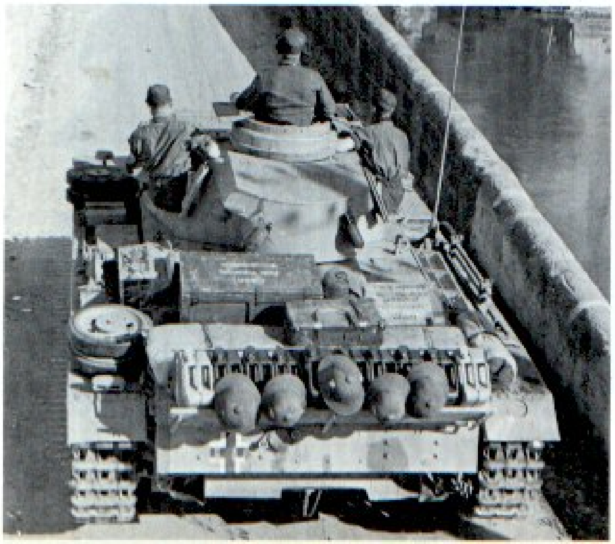
SdKfz 251/1c, Russia, Spring 1942
Overall Dark Grey with Dark Green overspray
and light coat of dust



Wespe [105mm le.F.H. 18],
Russia, Spring 1942
Overall Dark Grey
with bands of Dark Green



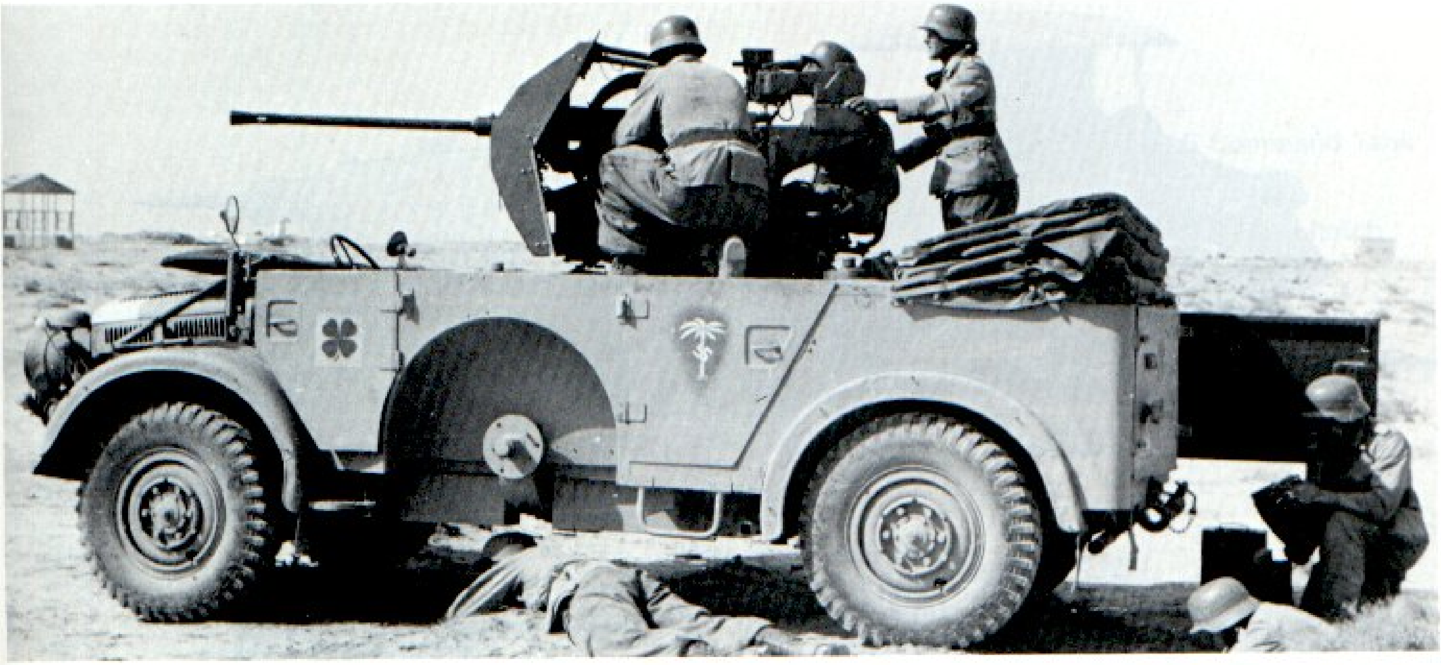




[Top] Two brand new SdKfz 250's, painted in yellow-brown with sprayed lines of gray green. This is a perfect example of careful "textbook" camouflage, done exactly as the orders intended. [Bundesarchiv]

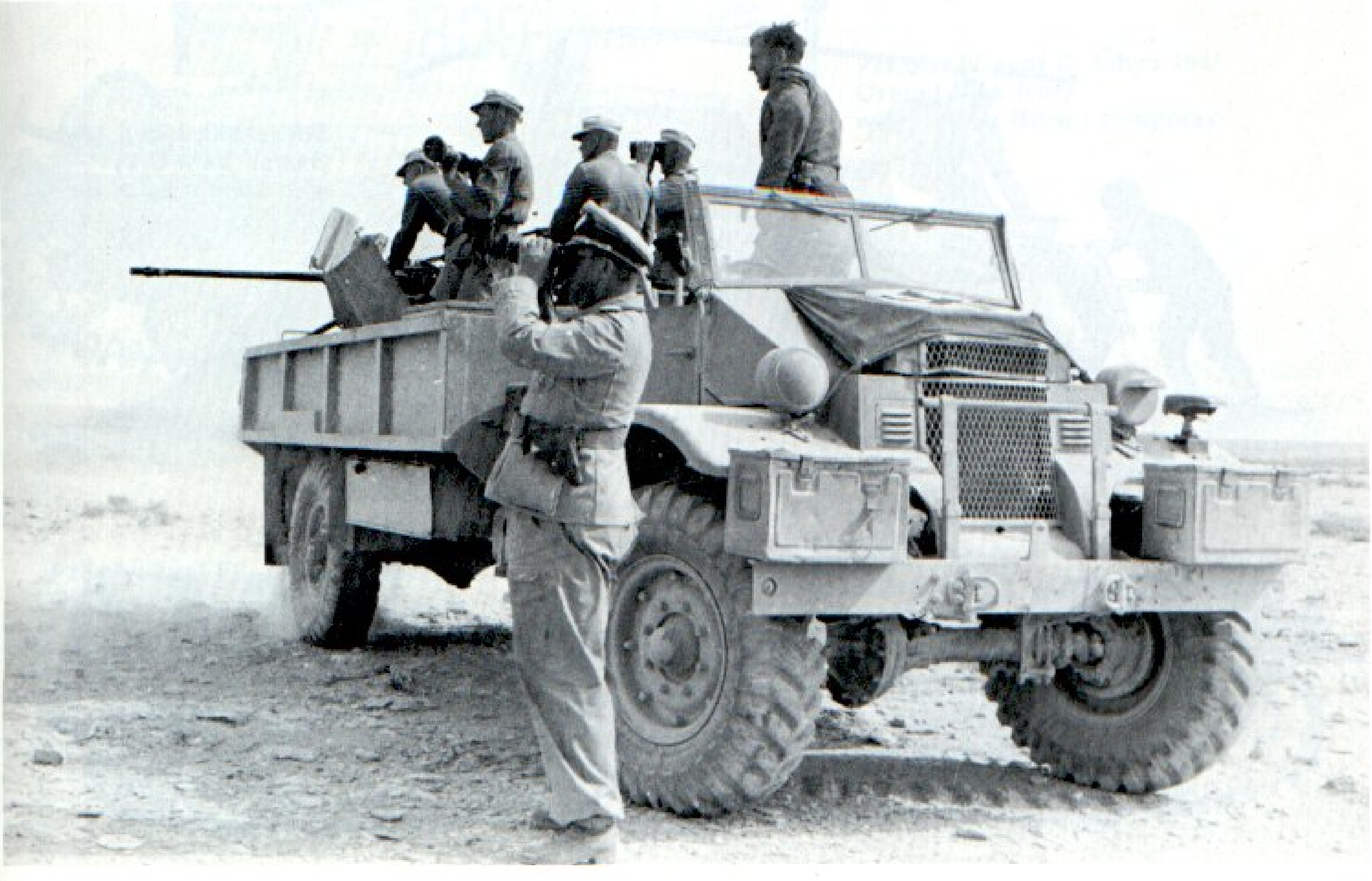
[Above] The other side of the same line of SdKfz 250's. The nearest vehicle, a 250/10, mounts a 3.7 cm PAK 36 with the later low armor shield. Note the old interior color on the drivers glass frame. The interior may not have been repainted. [Bundesarchiv]

A PzKpfw III ausf J entering Tripoli over a bridge. This vehicle is painted yellow brown, with some patches painted on the tailplate. The mottling on the turret stowage bin is caused by the shadows cast by a telegraph pole; the dark band is the shadow from the same pole. [Bundesarchiv]

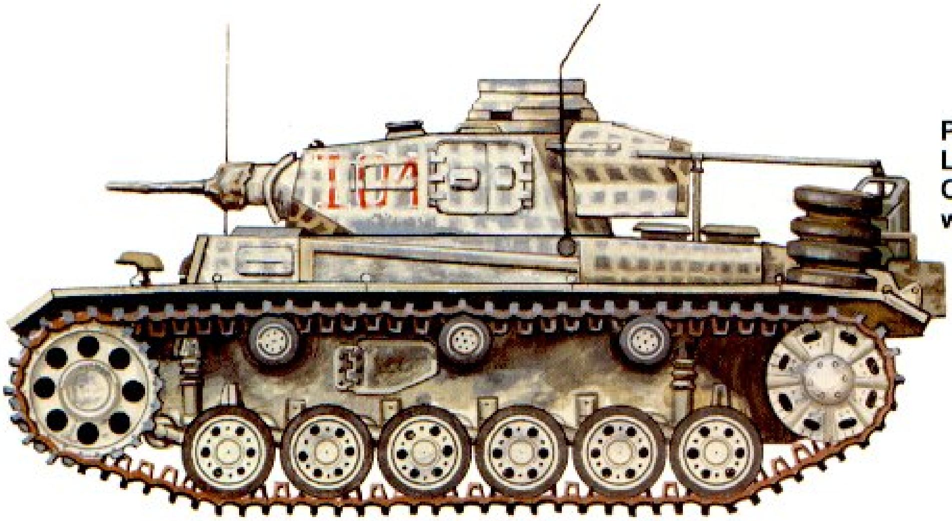


This Horch s.E. Pkw, Kfz 69, has been converted into a self-propelled mount for the 2 cm Flak 38. The yellow brown has been sprayed neatly over the entire vehicle, with a small area of original dark gray showing around the Afrika palm. The Flak 38 is still in dark gray. The four-leaf clover is green on a white square. [Bundesarchiv]

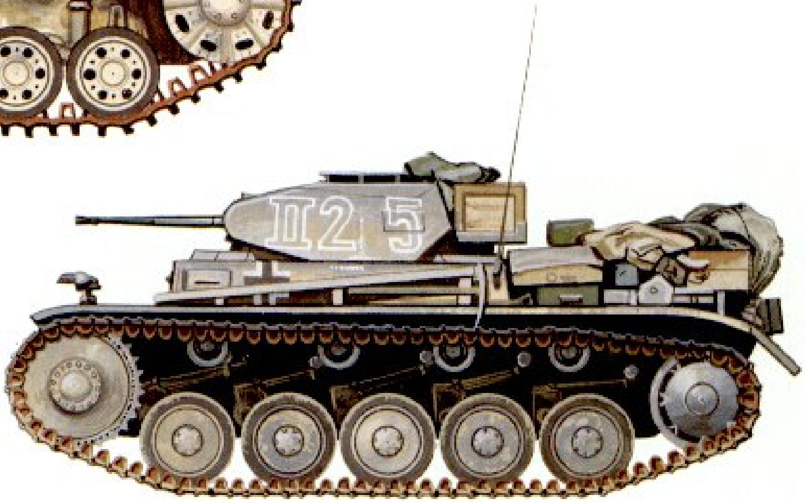
This captured British Canadian CMP truck has been converted into a self-propelled mount for a 2 cm Flak 30. The vehicle, has been repainted in yellow brown overall. The flag is carried to aid in proper identification by Luftwaffe pilots. [Bundesarchiv]



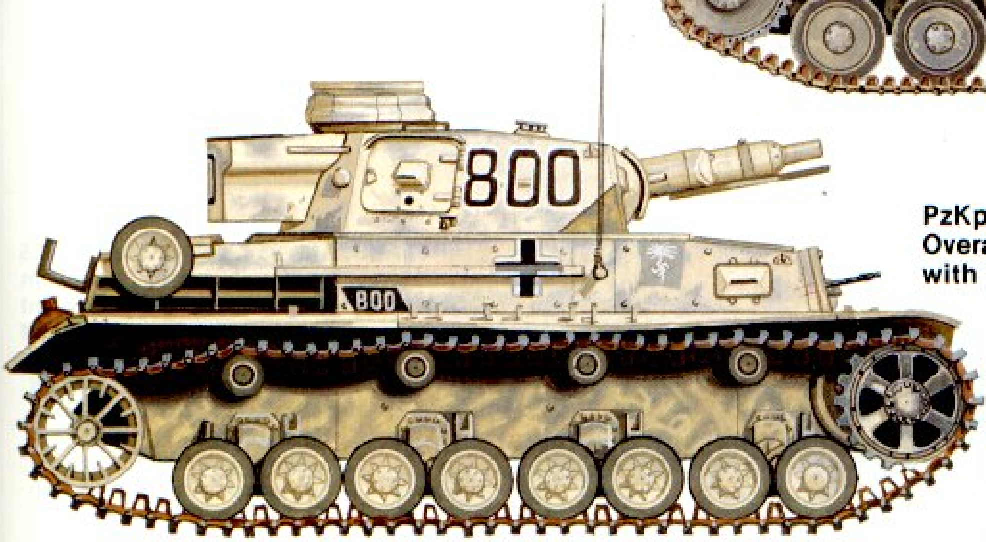
North African Campaign 1941-1942



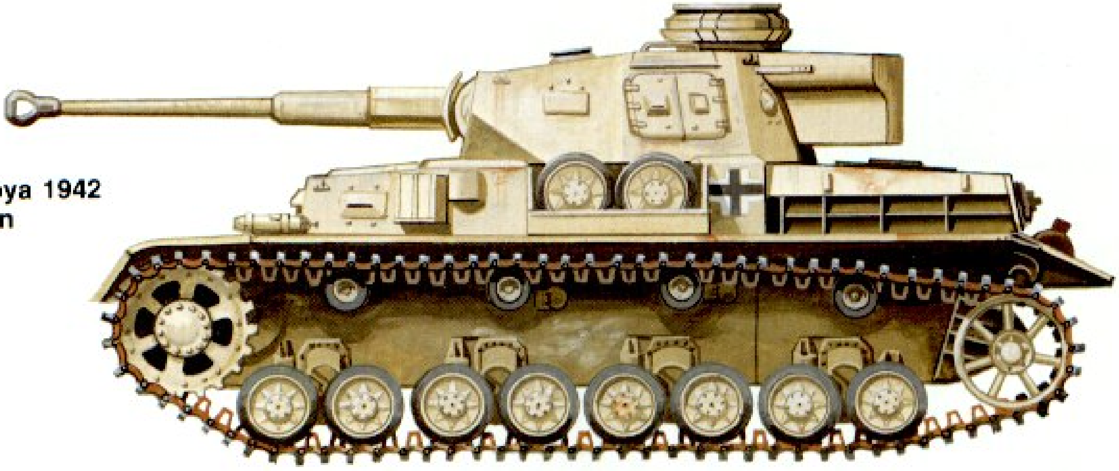
PzKpfw III ausf E Command Tank
Libya 1941
Overall Dark Grey
with Yellow-Brown cross hatch



PzKpfw II ausf F, Libya 1941
15th Panzer Division
Overall Dark Grey with light dust



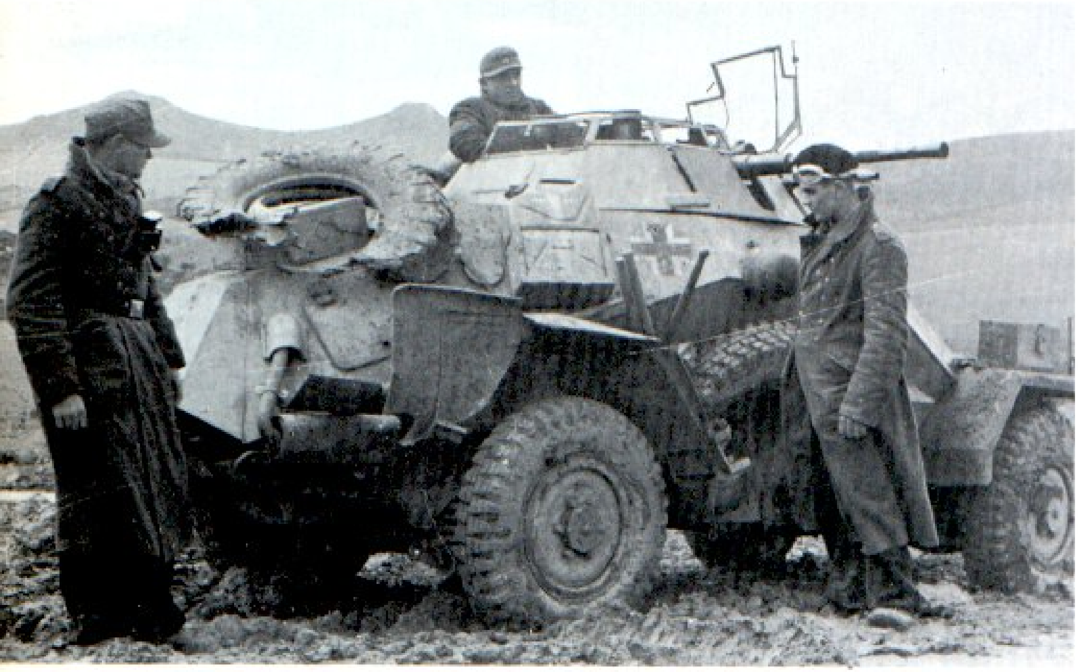
PzKpfw IV ausf D, Libya 1941
Overall Dark Grey
with Yellow-Brown overspray



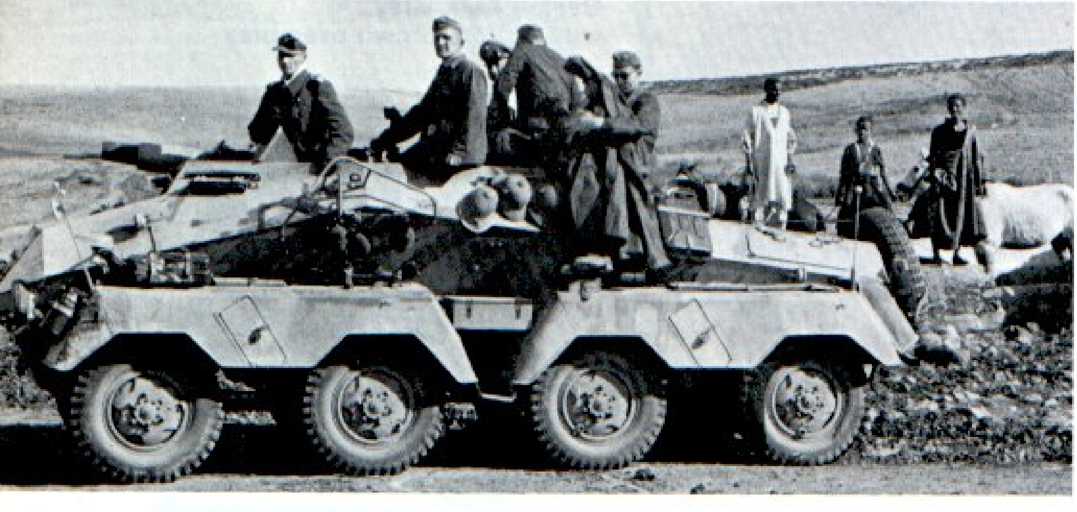
PzKpfw ausf F2, Libya 1942
Overall Yellow-Brown

HM 1942, no. 315, dated March 25, 1942, specified a new color scheme for vehicles used in North Africa. In place of the yellow brown and gray green, a darker sand color called brown (RAL 8020) and dark gray (RAL 7027) were used. The dark gray was the standard gray still in use elsewhere as the base color. By this time it had received the 7027 code number. Photographs do show that it stood out very well from the brown base color. Again, the official specification called for proportions of ⅔ brown to ⅓ gray, but in practice, this was rarely applied as directed. Most common was the scheme of overall brown, but some vehicles did carry mottling or "cloud" patches of dark gray. The old yellow brown/gray green paints were to be used up, so they would have been in use for months after this new order was issued. In June, 1942, Rommel's troops captured Tobruk and captured large quantities of British supplies and equipment. It is likely, therefore, that use was made of captured paints after this battle, as much British materiel became literally German "standard issue", so much of it was available.

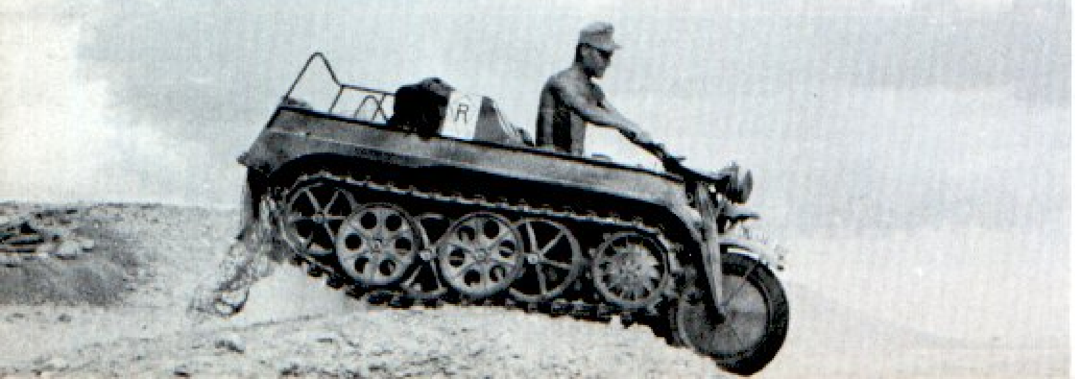
HM 1942, no. 600, dated July 3, 1942 authorized the brown/gray tropical colors for the troops on Crete.



The crew of this SdKfz 222 has just finished replacing a tire destroyed by a mine. The vehicle is desert brown with a black and white cross. The crew wears long overcoats in the chill air often found in the northern coastal areas. The water can is also brown, rather than the more common black or dark gray. [Bundesarchiv]

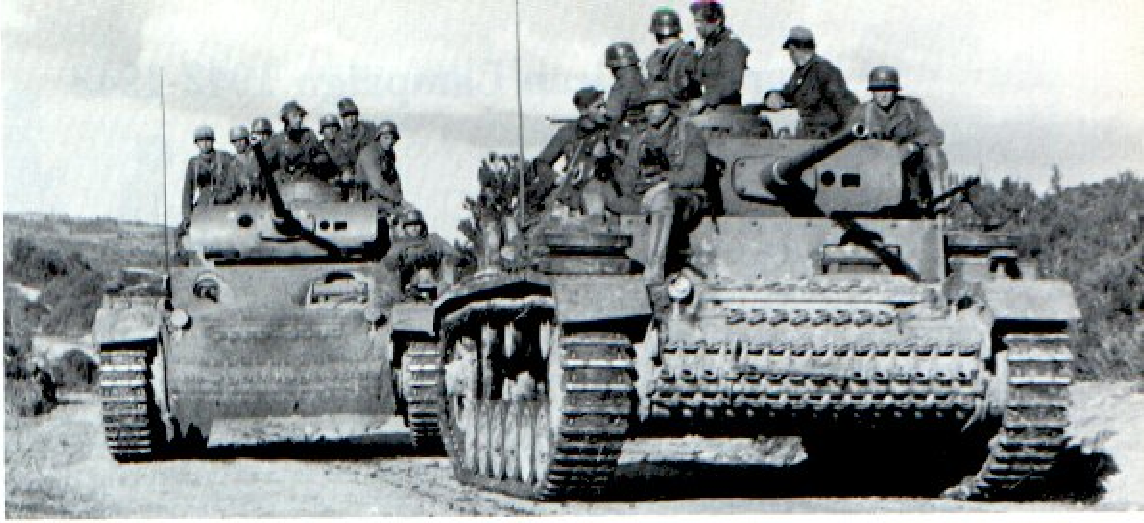


A SdKfz 233 self-propelled 7.5 cm howitzer, also seen in Tunisia. The desert brown paint is somewhat streaked and weathered. Note the old style pith helmets still carried. [Bundesarchiv]

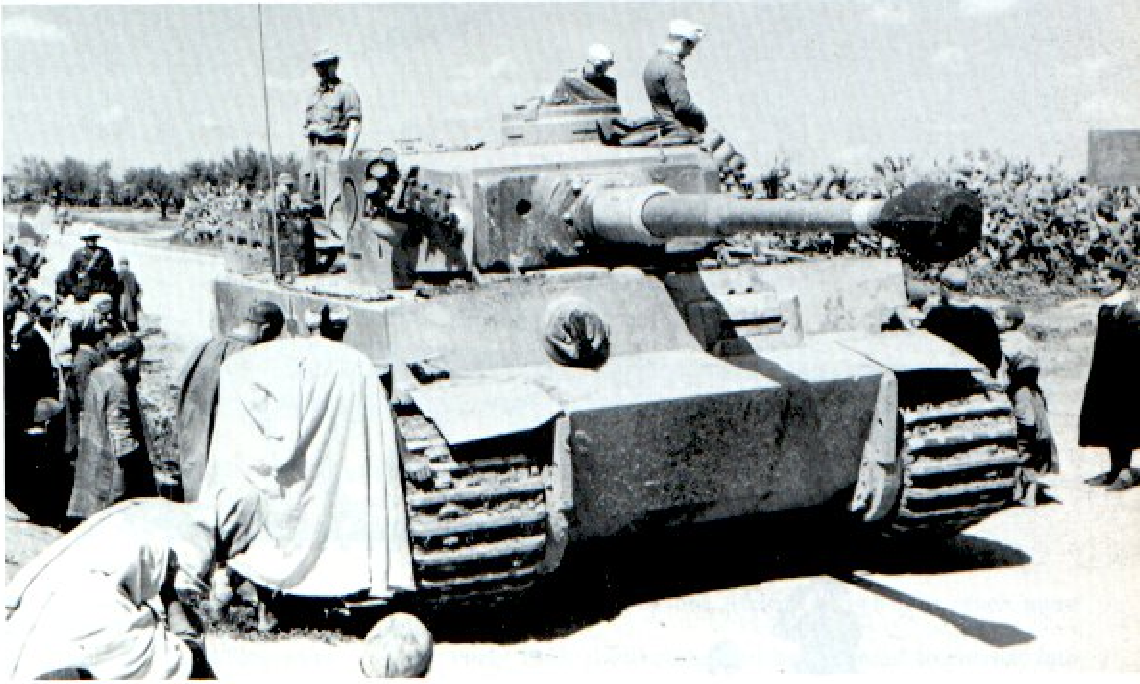


A NSU kleines Kettenkrad, SdKfz 2, of the famous Ramcke's Fallschirmjager brigade, in a scheme of brown oversprayed with the dark gray secondary color. Note the symbol for the Ramcke detachment, an "R" in a kite-shaped outline on a white background. [Bundesarchiv]

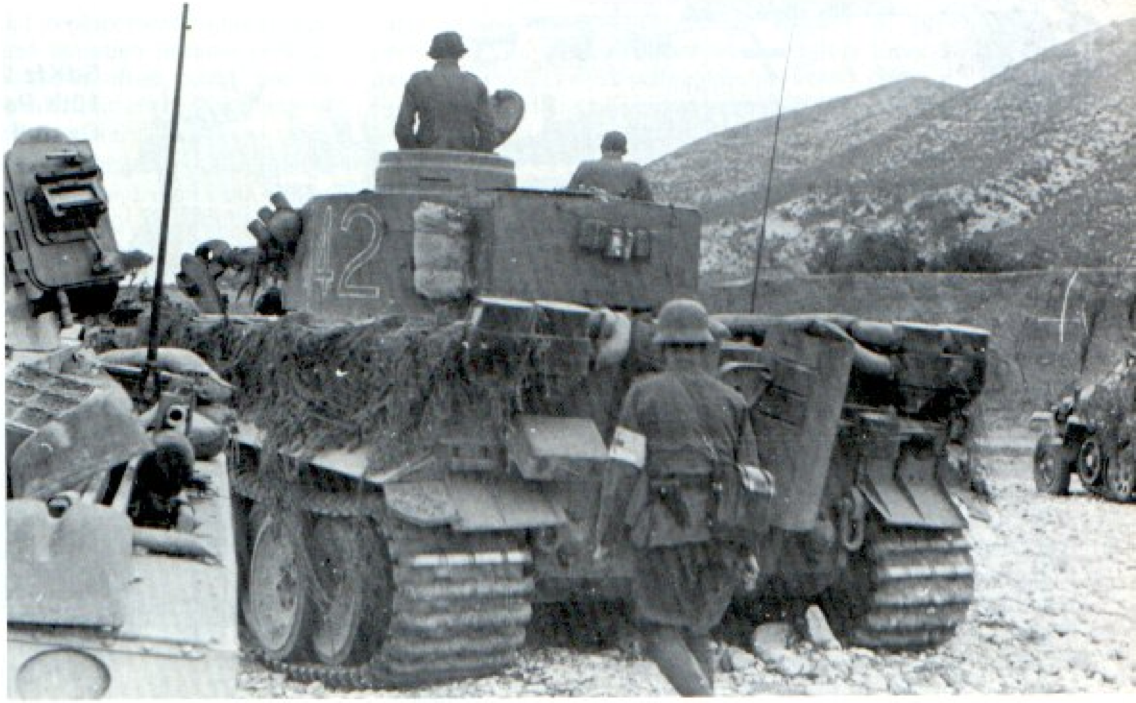
Two PzKpfw III ausf L's in Libya, 1942. Both are overall brown and no markings are visible. The rear tank has had mosquito netting draped over the front of the hull to help conceal the hard square shapes; the net looks more like a round natural dune or hill. [Bundesarchiv]



This desert brown Tiger I in Tunisia is covered with a layer of dust over most of the front. The turret numbers are black with white outlines, "124". [Bundesarchiv]

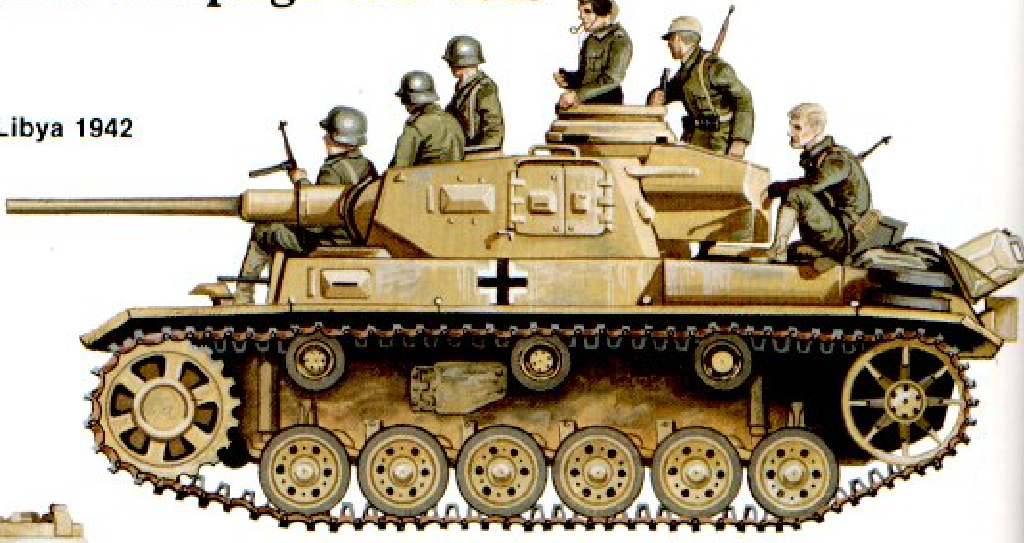


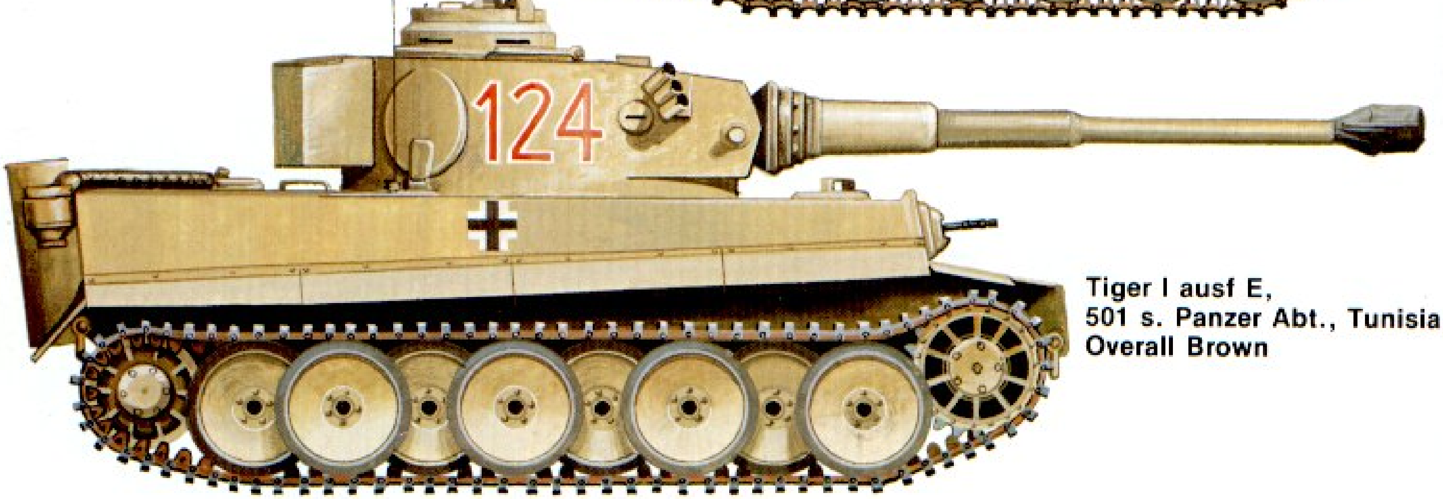
This Tiger I ausf E in Tunisia may be one of the olive green vehicles, though it is not possible to be sure. The tank is much darker than the brown tank in the foreground, and this indicates the color is olive green. The turret numbers are red with white boarders. [Bundesarchiv]



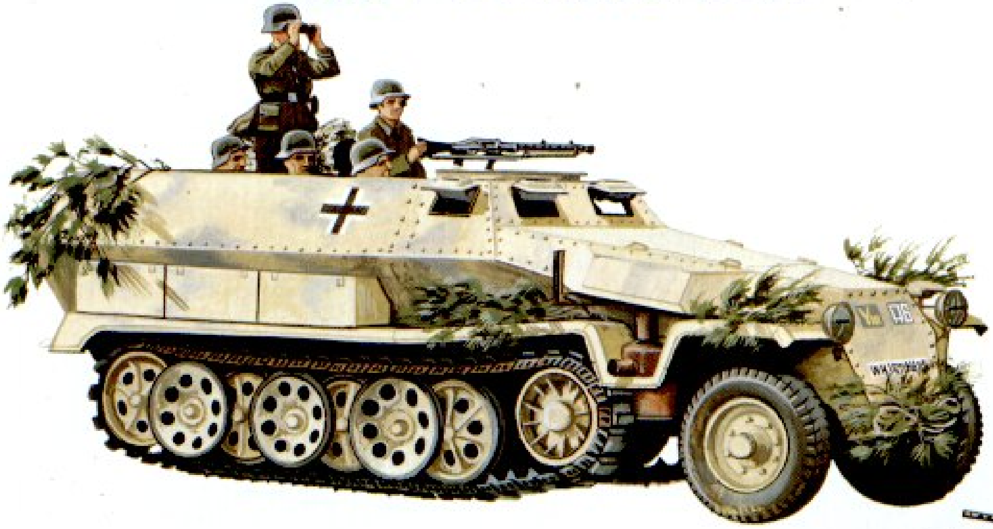
North African Campaign 1942-1943

PzKpfw III ausf L, Libya 1942
Overall Brown



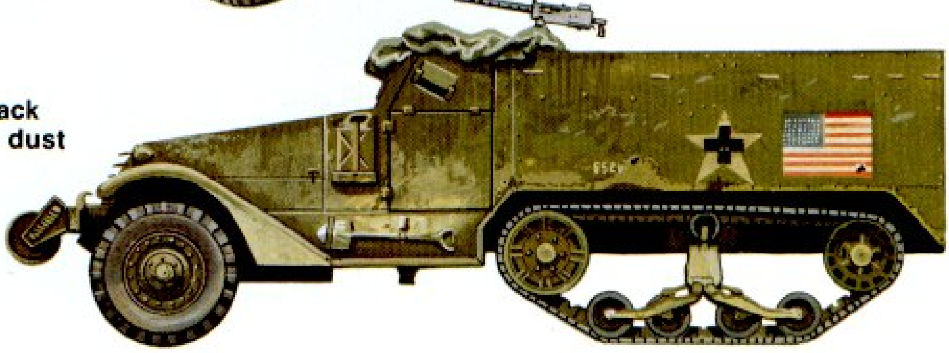


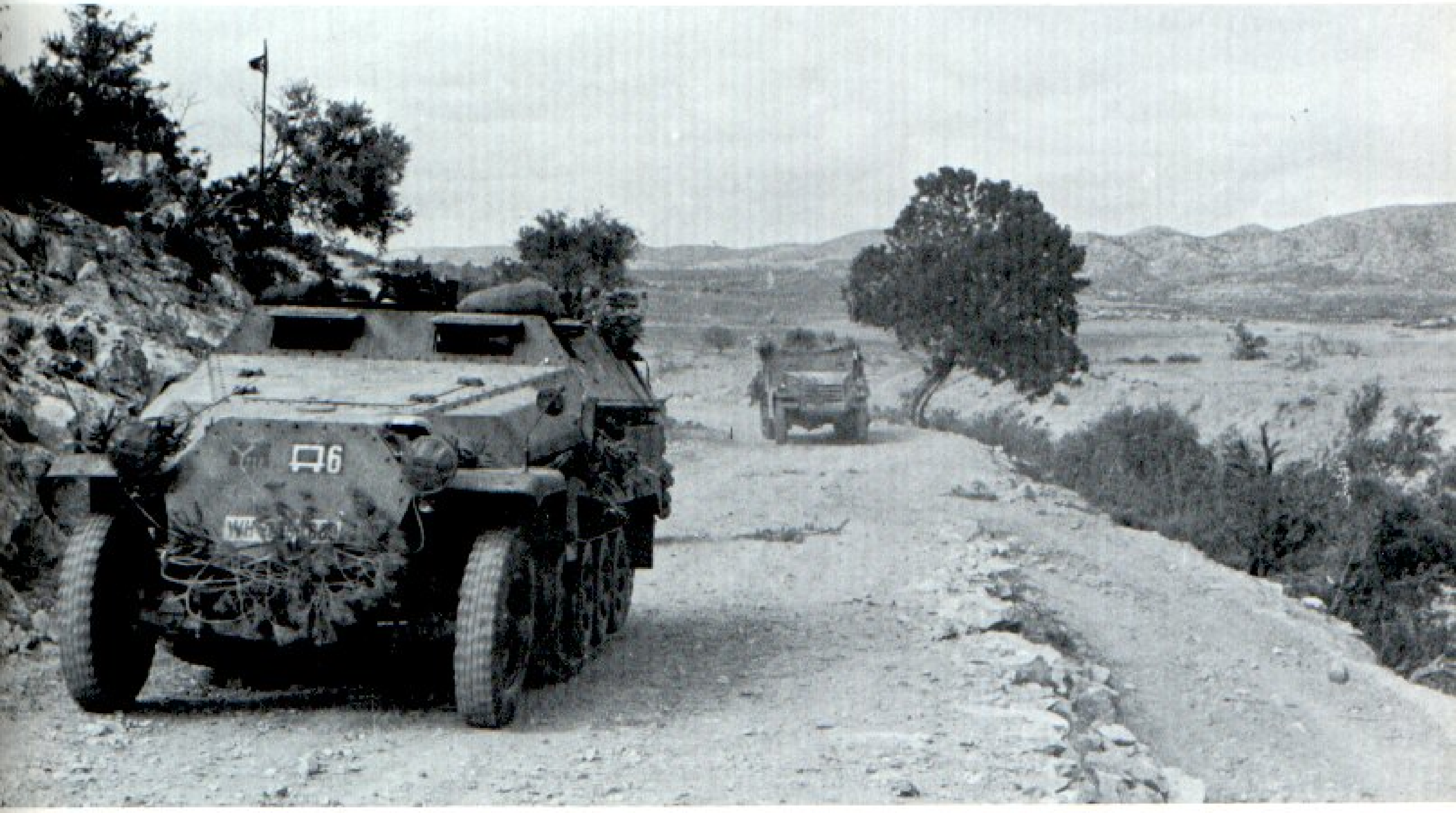
Tiger I ausf E,
501 s. Panzer Abt., Tunisia 194
Overall Brown



SdKfz 251/1c,
10th Panzer Division, Tunisia 1943
Overall Dark Grey
with overspray of Dark Yellow
and foliage

Captured US M3 Halftrack
Overall Olive Drab with dust





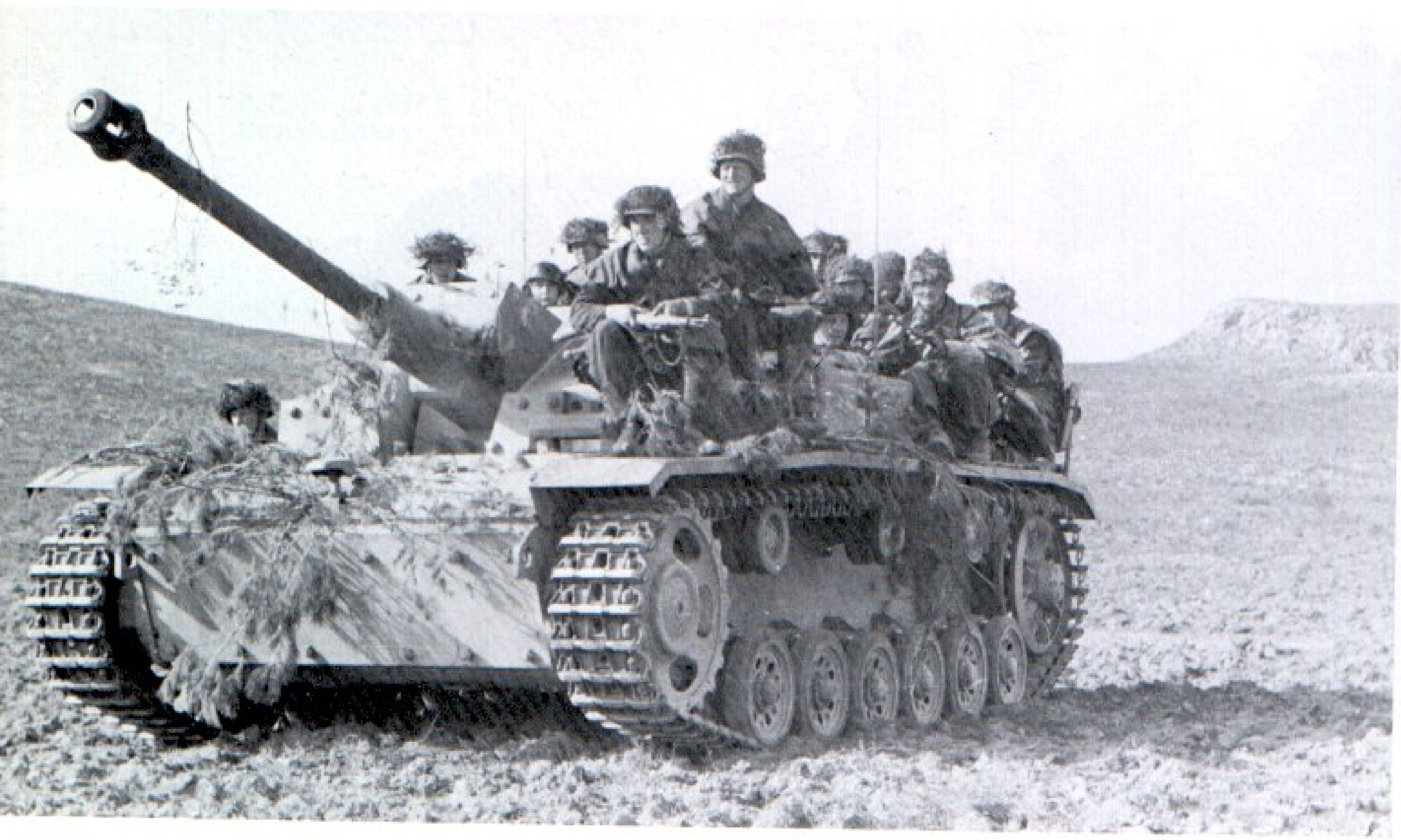
A SdKfz 251/1 ausf C [s.MG] leads a captured U.S. M3 halftrack down a road in Tunisia. The SdKfz 251 is from the 10th Panzer division, and has been repainted with an overspray of dark yellow covering the dark gray base. The insignia have been masked off, as was common early in the African campaign. [Bundesarchiv]

After the second battle of Halfaya Pass (Alamein), supplies of all forms of materiel and equipment became even more serious as losses mounted during shipping. The Allies were more successful in cutting off the flow of supplies from Italy and the D.A.K. suffered from severe shortages of nearly everything. Fuel, ammunition, and replacement vehicles had the highest priorities, and the paint situation became critical. During this long retreat, the vehicles often could not be thoroughly repainted, with the result that a great variety of colors in various stages of deterioration were seen.

Faced with severe losses during the battles around Halfaya Pass in October, 1942, the Afrika Korps was driven back across Egypt and Libya by the British 8th Army. In addition, the Anglo-American landings in French Morocco to the west introduced a second front, which further taxed Rommel's meager supplies. Largely in reaction to the "Torch" landings in Morocco, Hitler decided to resupply and reinforce the Afrika Korps. Included in the new supplies was a detachment of the brand new PzKpfw VI Tiger ausf E heavy tanks, of the 501st heavy tank battalion. The initial shipments of these vehicles were fitted with tropical air filters (the "Feifel" system) and were painted for African service in overall brown, RAL 8020, as were the replacement vehicles and equipment shipped during late 1942. It must be noted, however, that supplies of the new dark yellow paint were on hand in some tank and vehicle factories as early as December, 1942, and some very late 1942/early 1943 deliveries to the D.A.K. may have involved dark yellow equipment. Each factory began using the dark yellow paint as it became available. Therefore, it is **remotely** possible that even the first shipments of Tiger I's to Africa were dark yellow, but African brown was much more probable.

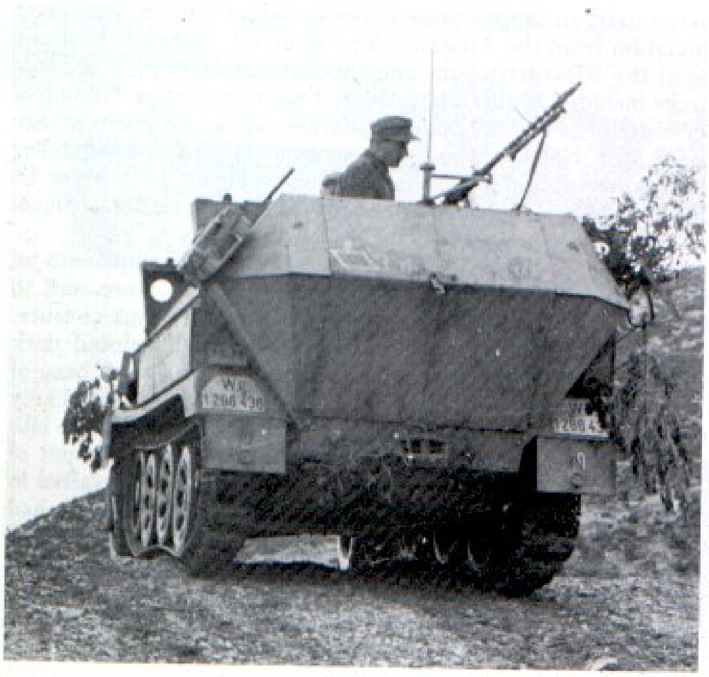
By early 1943, the D.A.K. had been forced to retreat into Tunisia. This was a more temperate area than the Libyan desert, especially near the Mediterranean, and with the rains in early spring came a surprising amount of green foliage, particularly in the north and west. At this time, a significant deviation from the African colors occurred. Some of the Tiger I's of the 501st battalion, and the PzKpfw III ausf N support tanks included in this unit, adopted an overall color scheme of olive green to better match the darker earth and green foliage of the area. Not all of the Tigers were so painted, but a number of them were, and several abandoned vehicles, both Tiger I's and PzKpfw III's, were found to have this rather unusual scheme.

In the spring of 1943, further last ditch shipments of replacement vehicles, guns, and other materiel were sent to Rommel's hard pressed forces. Most of this was sunk enroute, but the equipment that did reach Africa was painted dark yellow - occasionally applied as a second color over a base of dark gray on vehicles transferred from other areas. It is likely that some camouflage pastes were shipped also. It was too late to affect the outcome in Africa, and the very small amount of material that reached Rommel after January, 1943, resulted in the fact that after the battle of Kasserine Pass, the D.A.K. had captured so much U.S. equipment that 85% of its vehicles were either of British or American origin. Thus, on a practical level, by the surrender of the Afrika Korps in May, 1943, British desert sand and U.S. olive drab were almost as common in German units as any of the German colors.

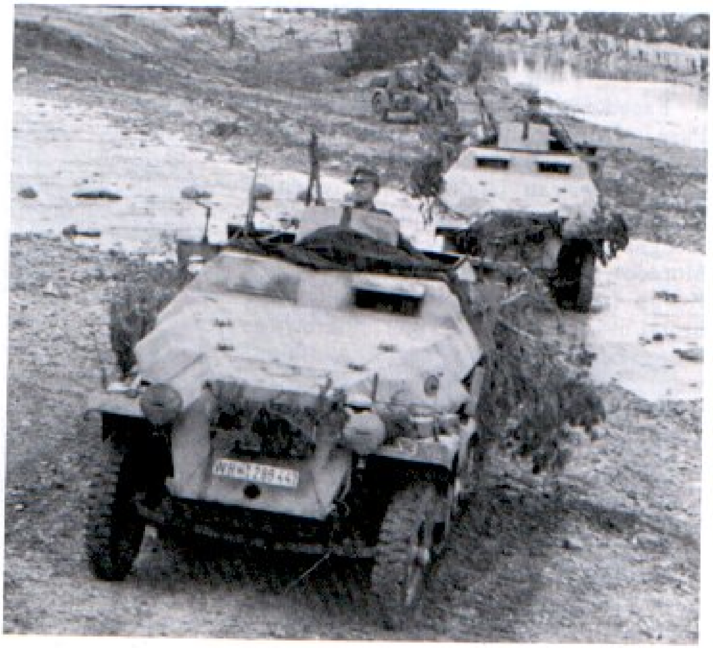


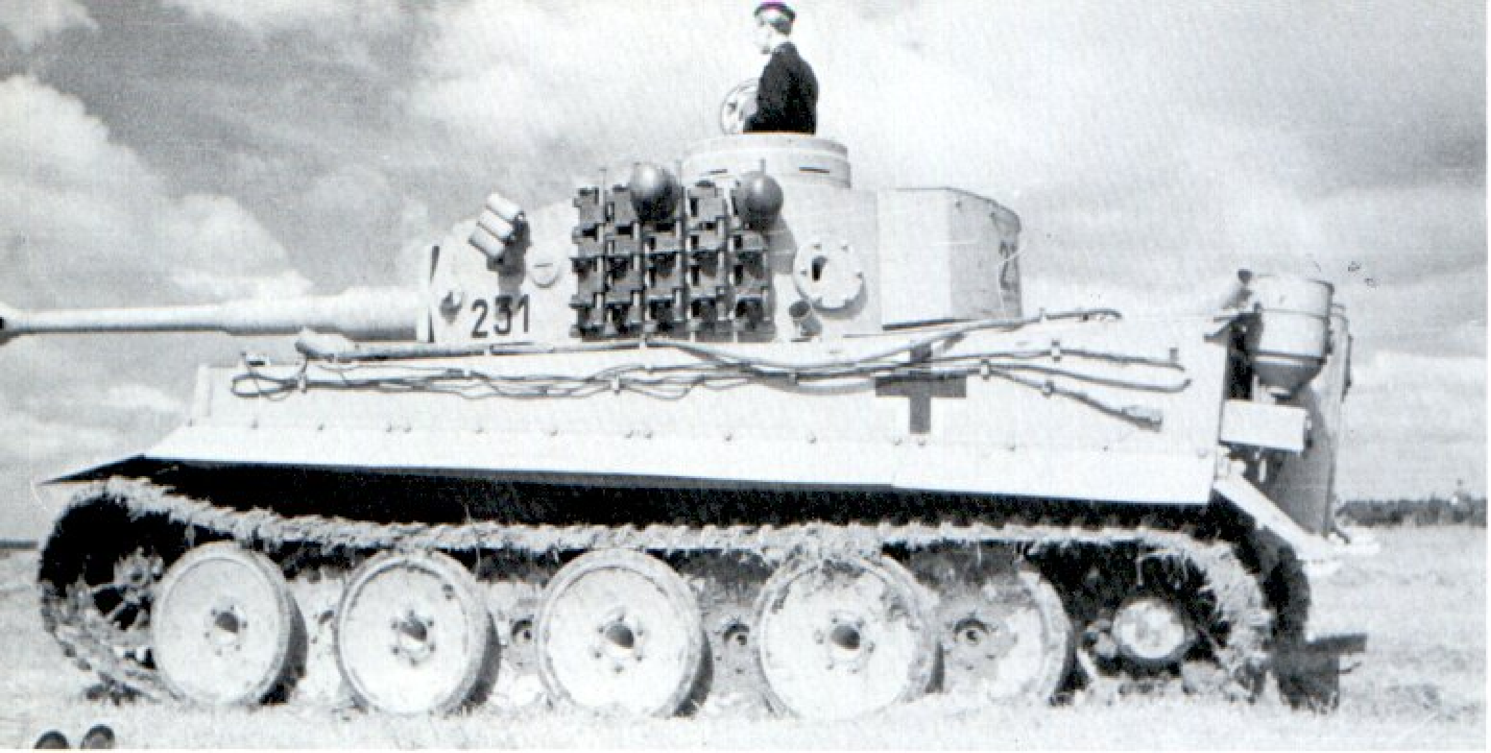
This StuG III ausf F was photographed in Tunisia,. Part of the last-ditch effort to reinforce Panzerarmee Afrika and the D.A.K., this vehicle was painted overall dark yellow. Foliage has been used to break up the corners of the the superstructure front. Tunisia was much more temperate in climate than the Libyan desert, and many troops, as here, wore standard European uniforms. [Bundesarchiv]

This SdKfz 251/7 engineers' vehicle again shows the application of dark yellow over the dark gray base. This was not confined to Africa but was done there first, as the vehicles were sent. [Bundesarchiv]



These two SdKfz 251's show different types of repainting. The rear vehicle is overall dark yellow, and may have been a new vehicle, but the front 251 is dark yellow sprayed over the dark gray, some of which shows through. [Bundesarchiv]





This early production Tiger I ausf E, seen just before the Kursk offensive, is fitted with the tropical "Feifel" air cleaning filters and the extra "S" mine launchers at the corners of the hull. The color is overall dark yellow. The turret numbers are black. Many German vehicles used only the dark yellow base color, largely because of supply shortages and lack of time. [Bundesarchiv]

Three Color Camouflage 1943-1945

Increasing dissatisfaction with the dark gray base color in field commands led to development of a new camouflage system. No longer were vehicles and large guns, etc. capable of being concealed in woods and villages. In many areas in the vast Russian steppes and open fields, equipment was exposed for long periods, as no cover was available. In these conditions, the limitations of the dark gray paint became evident.

The new camouflage system consisted of a new base color, called dark yellow. All vehicles, weapons, and large pieces of equipment were to be painted in dark yellow at the factory. In addition, new colors were issued for painting of camouflage patterns on the equipment. These shades were olive green (this was a **Luftwaffe** color used **not** for aircraft, but for painting buildings and ground installations) and a red brown, RAL 8017. These two colors, along with the base coat color dark yellow, were issued in the form of concentrated paste, much like shoe polish. The paste came in 2 kg. and 20 kg. cans, and units were to order these pastes according to the estimated need of the equipment used. Tables were provided for the troops, listing the approximate requirements of each type of vehicle or equipment for the three paste colors. This was to enable units to order the correct amount of paste. The dark yellow paste was to be used for covering unwanted colors or portions of the camouflage schemes, especially during changes in seasons.

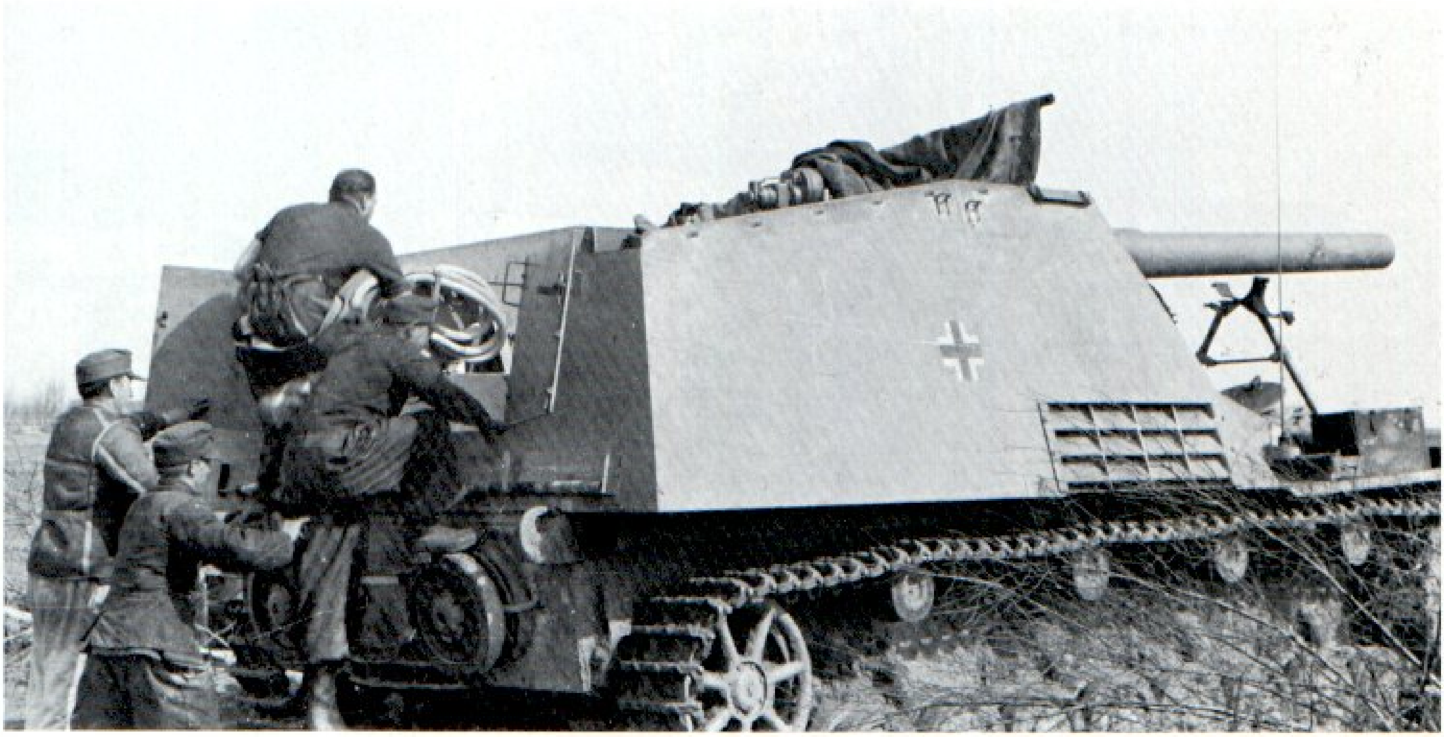
This new system was designed specifically to allow local commanders the widest latitude in coloring their equipment so as to blend with local conditions of terrain, foliage, or even buildings and unusual soil conditions. The paste colors could be thinned with gasoline or water, and could be sprayed, brushed, or mopped onto the vehicles. Gasoline was used to remove the paste colors if necessary.

HM 1943, no. 181, dated February 18, 1943, ordered the three color system, using the dark yellow as the base color. All vehicles and large items of equipment were to be painted dark yellow. Small equipment carried in the vehicles (radios, tool boxes, supply boxes and cabinets, etc.) were to be left in their original color until further notice. The camouflage paste colors were to be ordered by the using units as required, and application of additional colors and patterns was the discretion of local unit commanders. The pastes were to be used for coloring all tarpaulins and canvas tops on vehicles.

During the winter of 1942/43, all vehicles sent to Russia and Finland were to have washable white emulsion paint applied over the dark gray (or dark yellow) base color up to the end of February 1943.

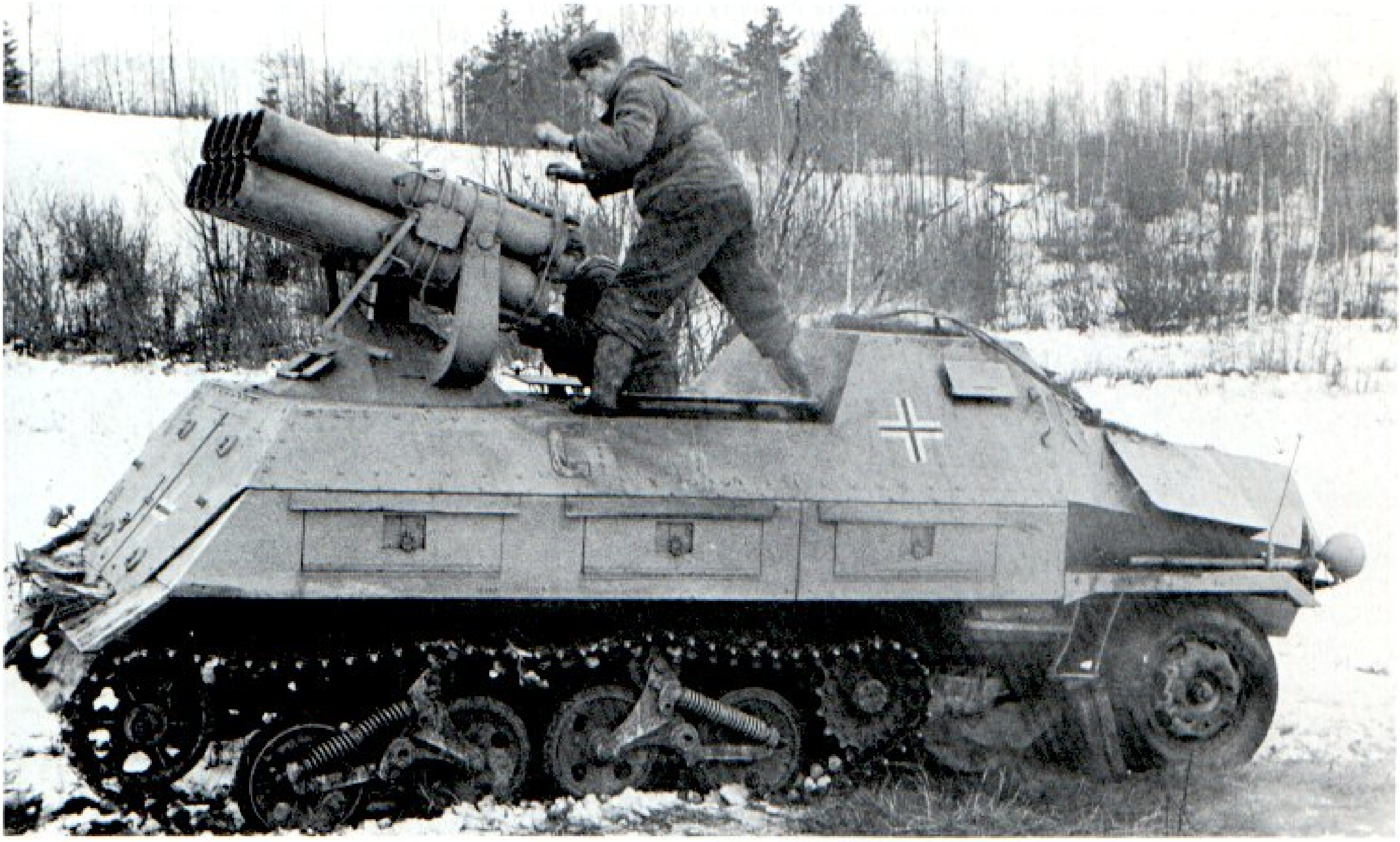
HM 1943, no. 181, also dealt with existing equipment. All new material painted in dark gray had to be repainted dark yellow before issue to using units. Equipment already in use at the front was not repainted, but the three camouflage paste colors were to be used to effect changes in the color scheme as required by local conditions. Equipment used by occupation troops, and reinforcements or replacements to front line units had to be repainted as soon as possible, the latter before joining the combat units. A later technical bulletin stated that Reserve vehicles were to be repainted dark yellow only as the equipment needed painting or overhauling. Repainting of front line equipment had the highest priority, though vehicles in action used the paste colors only in order to save time and keep them in service. Many rear-area occupation vehicles thus were not repainted.

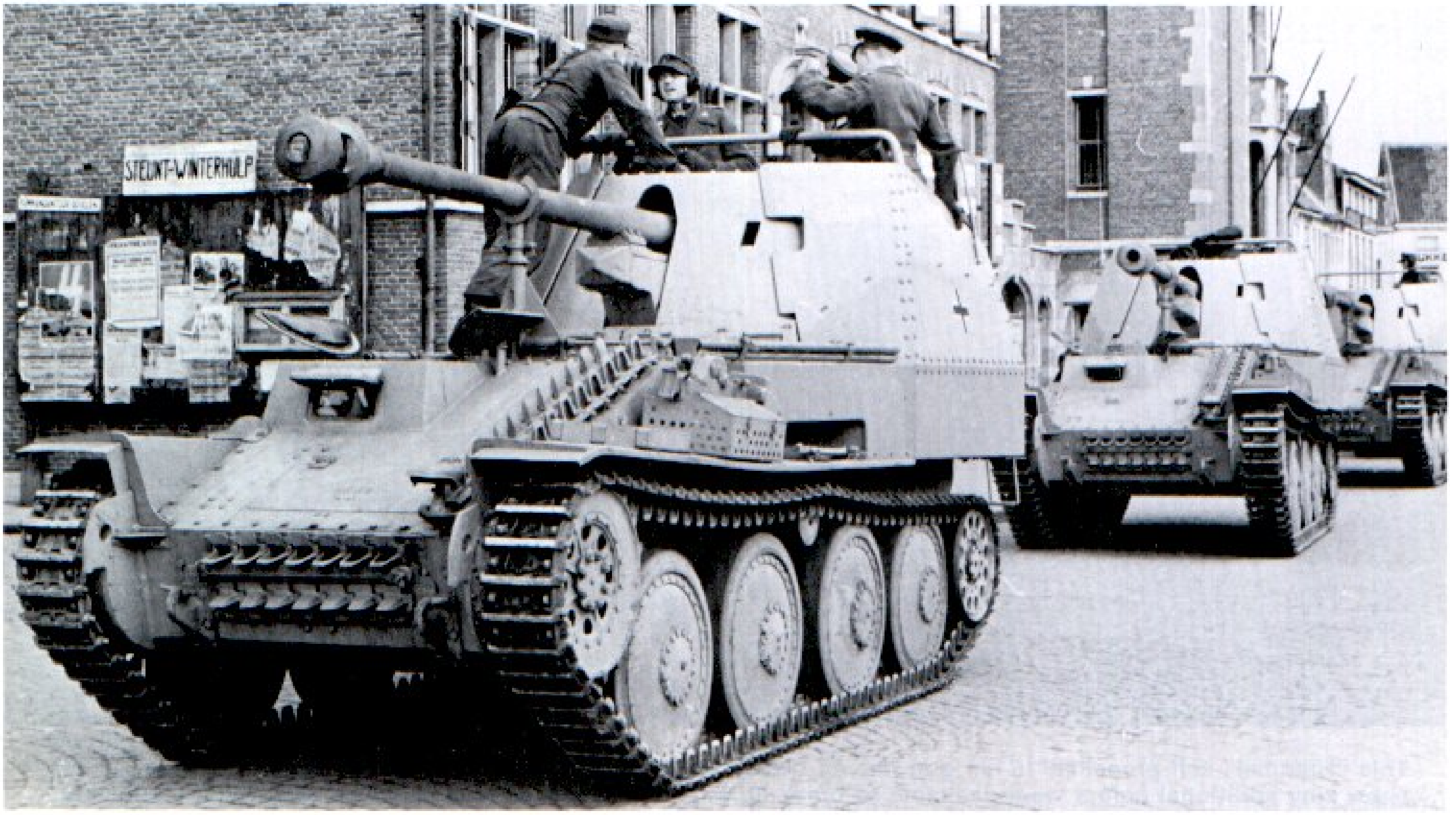
HM 1943, no. 322, dated October 11, 1943, dealt with engineers' equipment. Most pontoons, landing craft, and bridging equipment were to be left in their original base colors, and the pastes were to be used to alter the color schemes. All other equipment and vehicles were to be repainted dark yellow. Reserve units were to paint their equipment according to what paints were available.



This "Hummel" self-propelled 15 cm gun has an overall covering of dark yellow. The high sides of this vehicle show why additional colors were desirable to break up large solid shapes and better conceal large equipment. [Bundesarchiv]

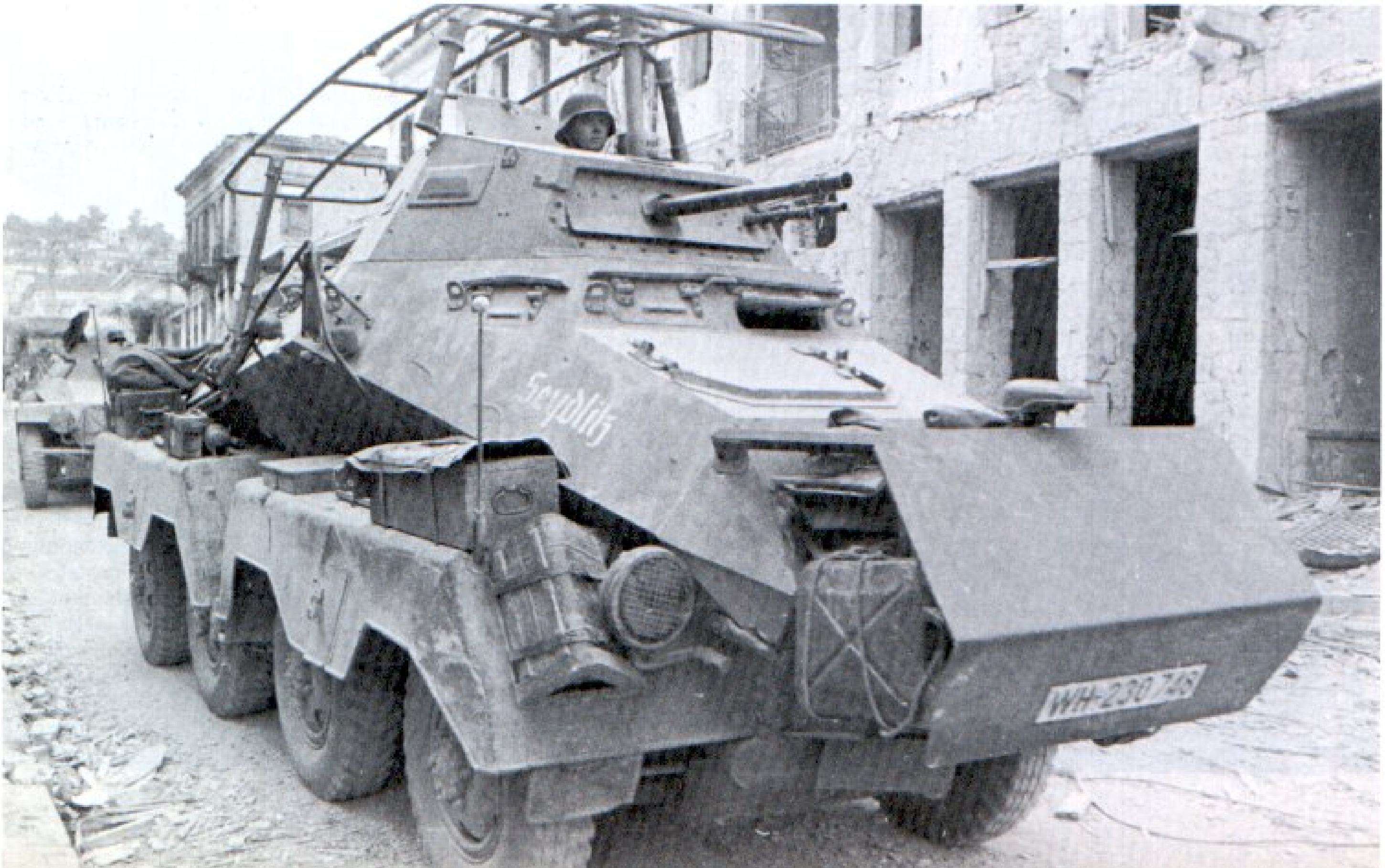
An Opel armored halftrack, Panzerwerfer 42, is seen in Northern Russia in the spring of 1943. The vehicle is painted dark yellow overall. Note the black outline "C" on the side of the halftrack, and the soot streaks from previous firings. The narrow crosses were normally found on these vehicles. [Bundesarchiv]

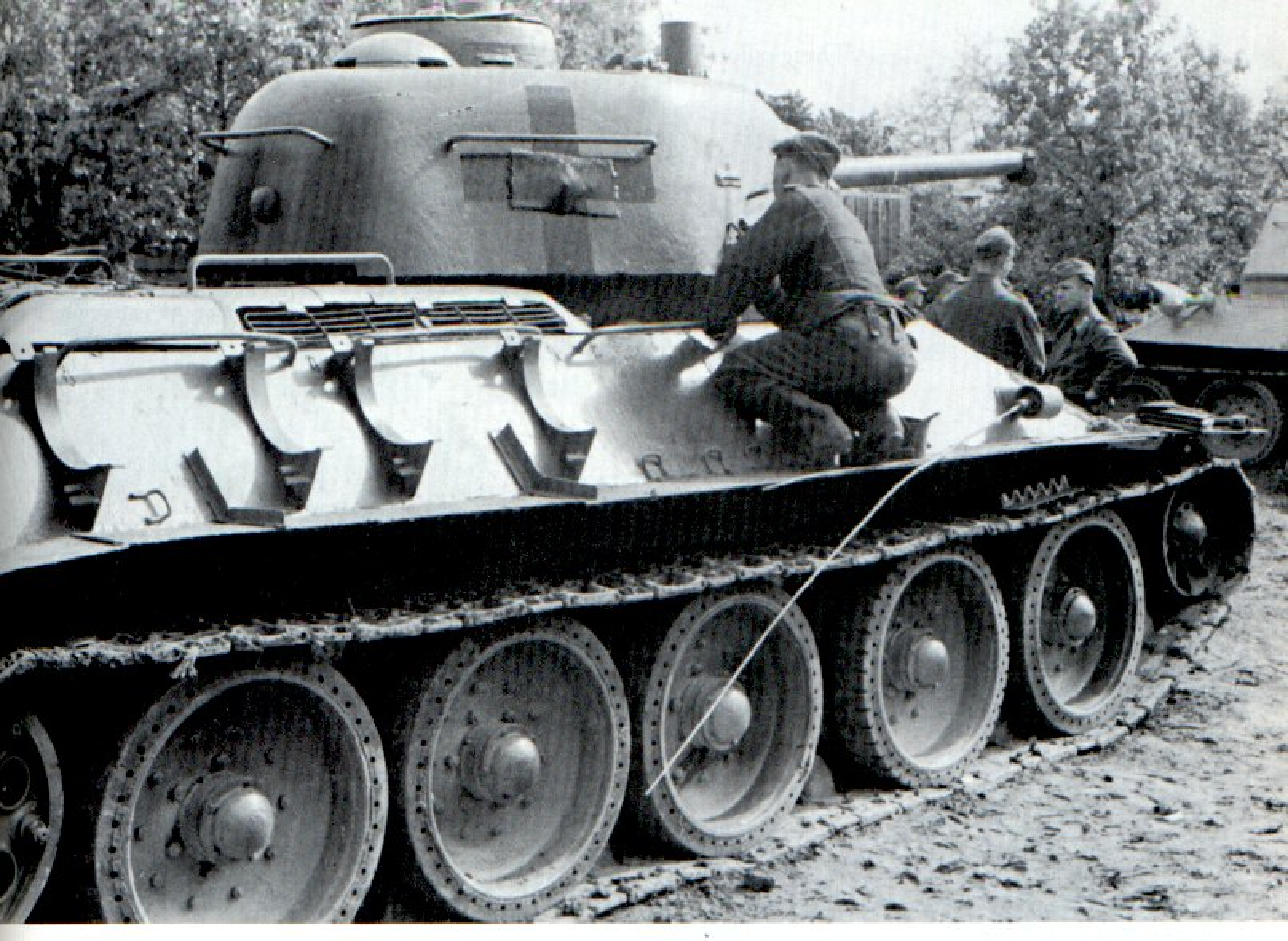




These Marder III ausf M's in Flanders, 1944 show the effect of weathering. The overall dark yellow is in two shades, the result of canvas covers having been fitted over the upper sides and front of the gun compartment [Bundesarchiv]

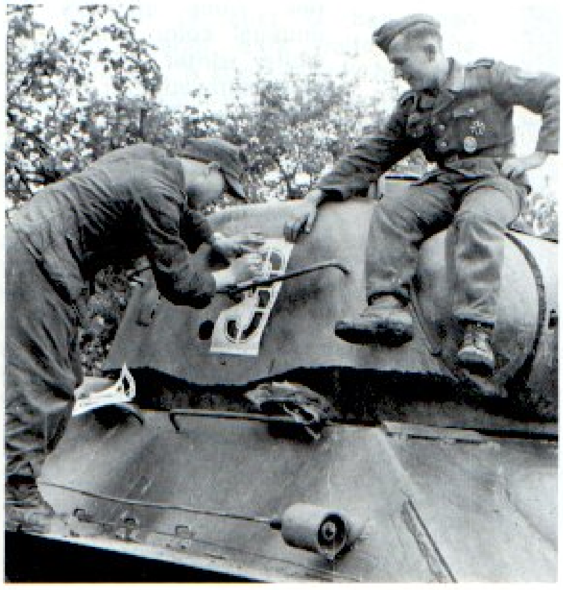
A SdKfz 232 [8 rad] armored car on occupation duty in the Balkans. Painted in overall dark yellow, this vehicle is covered with dust. "Seydlitz" is in white. Note the jerry can carry behind the spaced front armor. [Bundesarchiv]



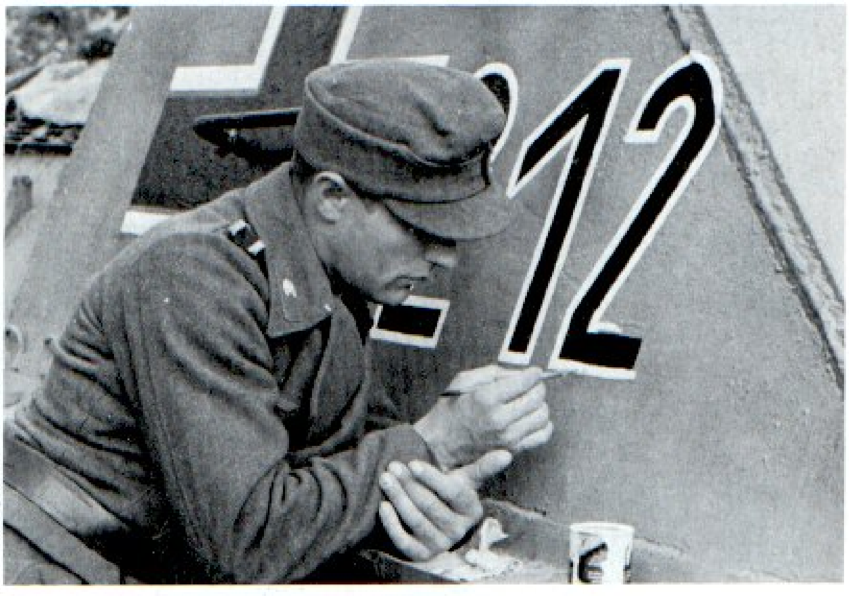


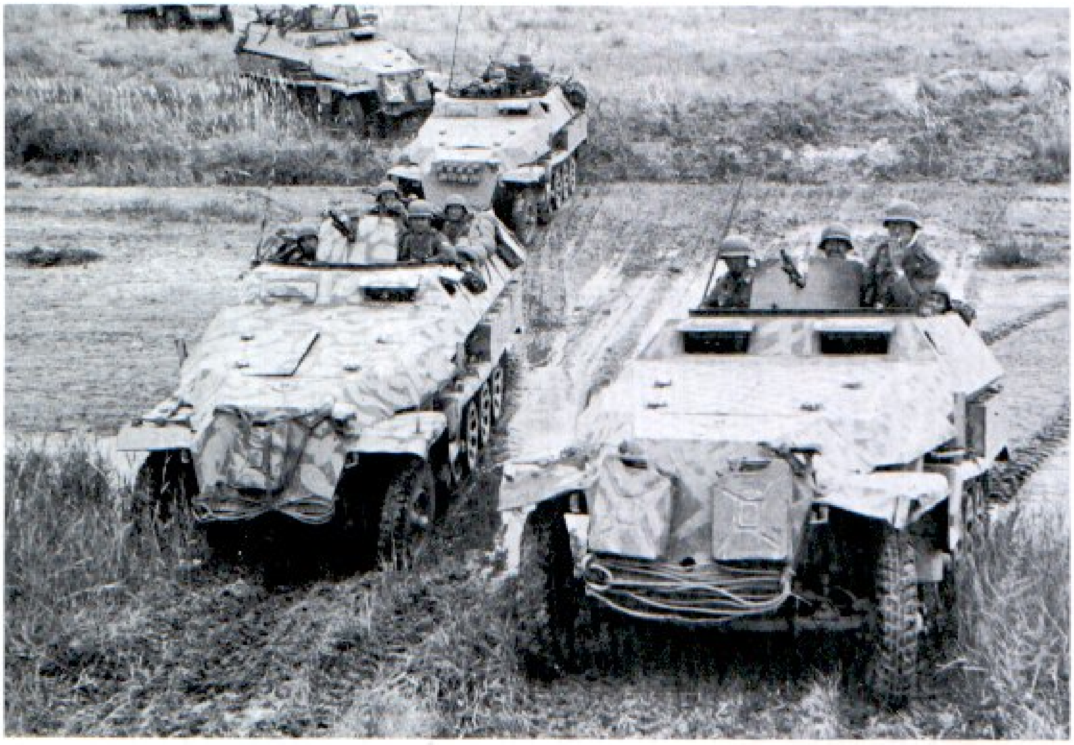
This T34/76 model 43 has been repainted in overall dark yellow, and the black background for the national cross insignia has been applied. The crosses on most captured equipment were oversized. The turret numbers were usually painted by hand, but stencils were used also.

These men used number stencils to make pencil outlines for the turret numbers, which will then be painted by hand. Sometimes the outlines were sprayed with stencils only, but not commonly. [Bundesarchiv]

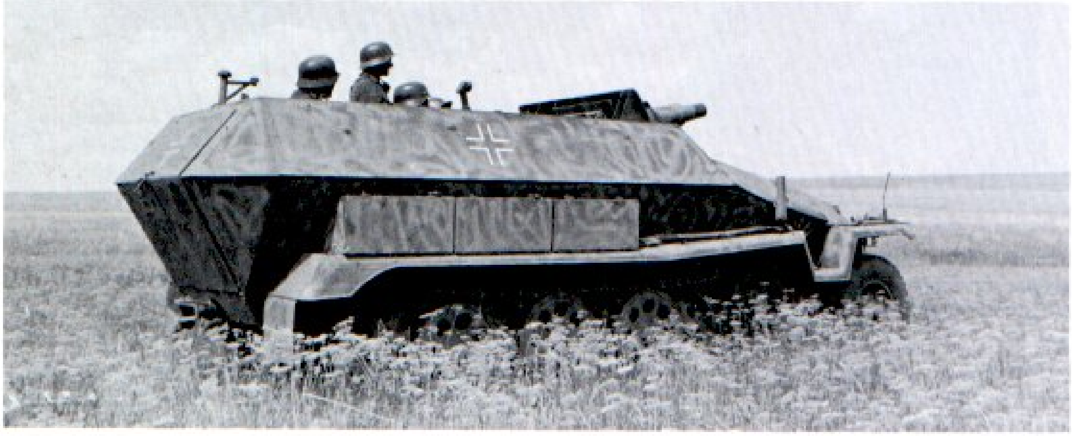


An SU-85, completely repainted in dark yellow, receives finishing touches on the tank numbers. The neatness of the job was entirely dependent on the skill of the painter. [Bundesarchiv]

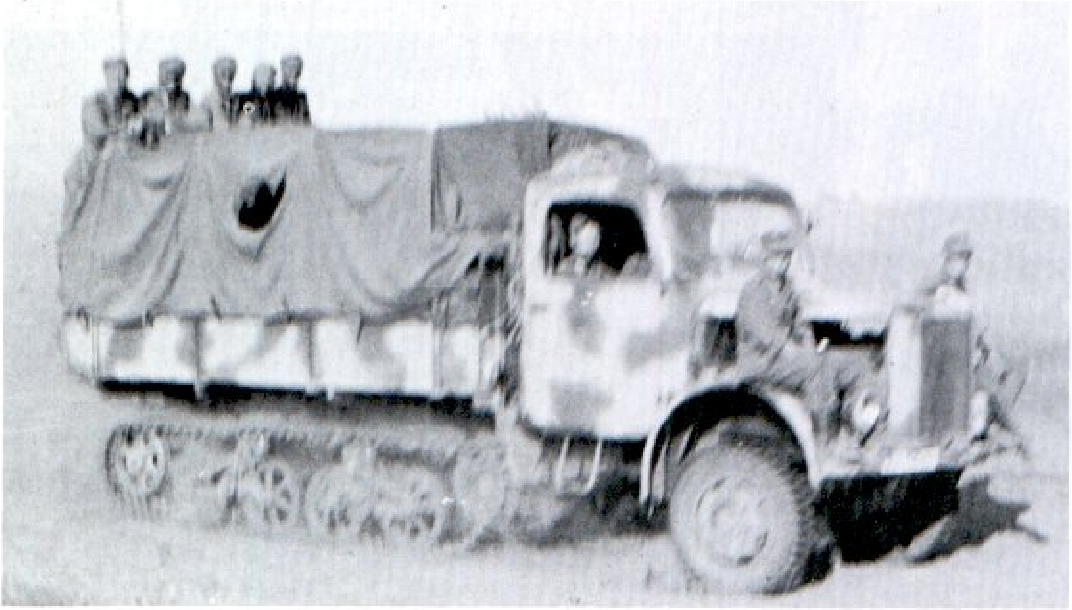




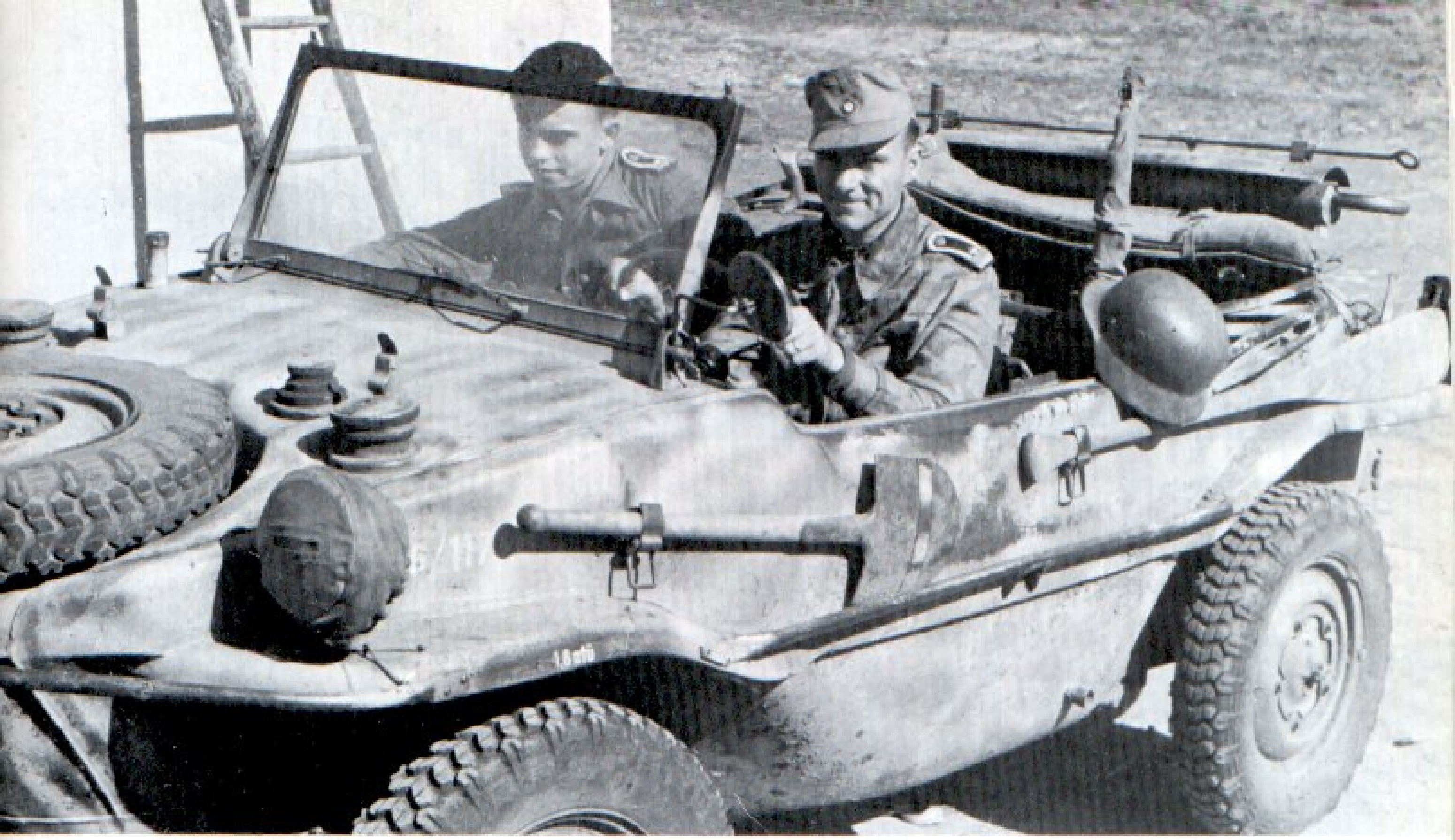
These SdKfz 251's have been repainted with dark yellow strokes over the old dark gray. However, the near vehicle on the right has been painted with mud, indicating that as usual, supplies of paints were insufficient for all needs. It can be extremely difficult to tell mud from paint.



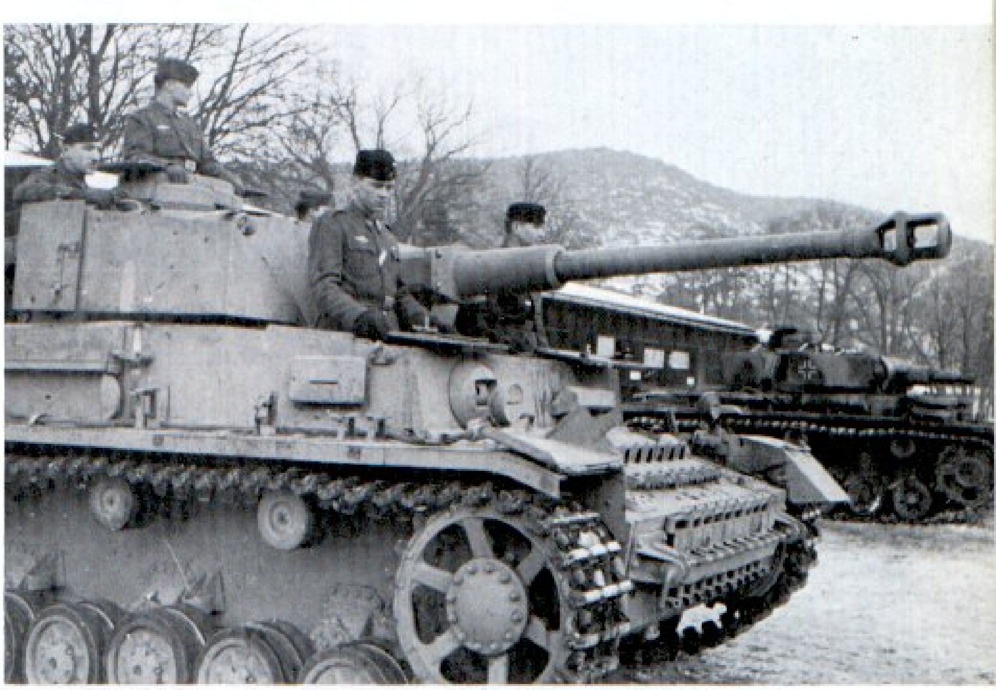
A SdKfz 251/9 ausf C with dark yellow sprayed in narrow wavy lines over the dark gray. This was a fairly common practice, to save paint and time. The interior is dark gray. [Bundesarchiv]



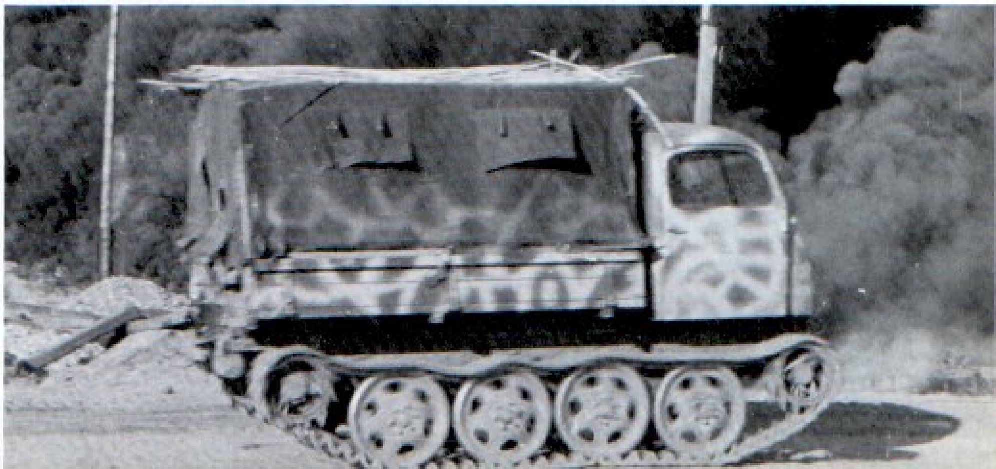
This Magirus [KHD] "Maultier" truck displays an unusual color scheme of white winter camouflage paint sprayed over the old dark gray. This served to break up the shape, and dust soon muted the white to a large extent. [Bundesarchiv]



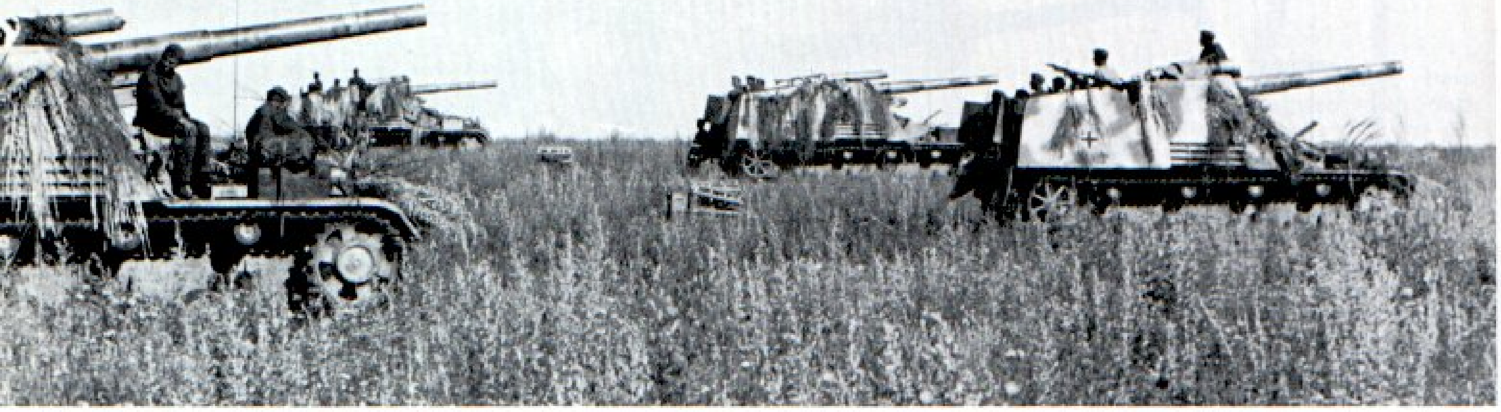
A Schwimmwagen in Russia, showing an extensive sprayed pattern of dark yellow over the dark gray. The yellow has been work away from the upper edges of the body. Paint was often rubbed off corners or protruding structures. [Bundesarchiv]



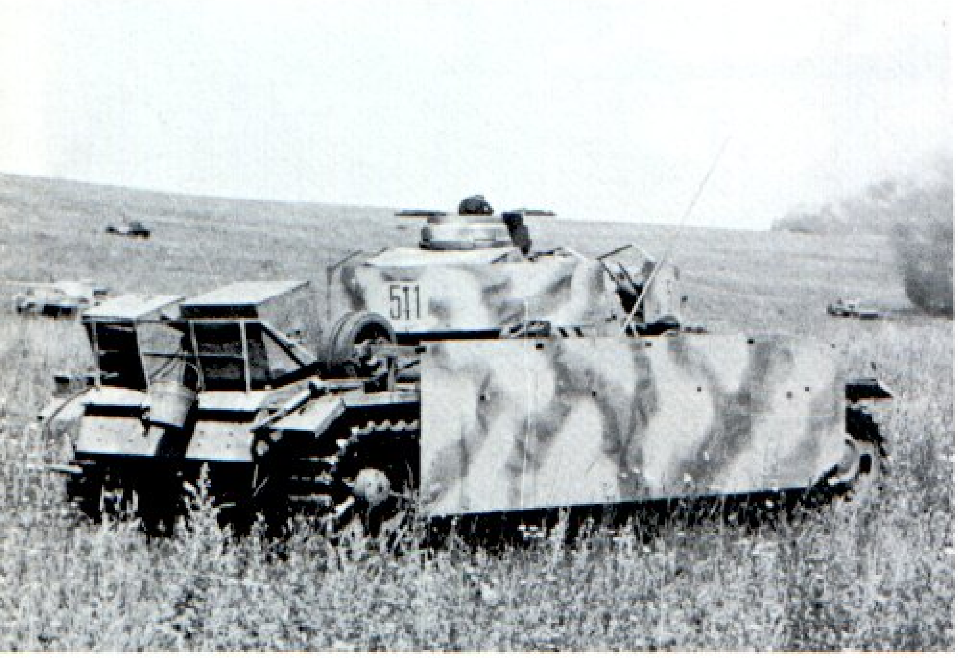
The PzKpfw IV ausf G has been repainted overall dark yellow. The PzKpfw III ausf N support tank has dark yellow wide bands sprayed over the dark gray. In common with many later PzKpfw IV G's, this example has turret skirts.



A Steyr RSO tracked truck in Russia. The body and lower part of the cargo bed cover have been oversprayed with connected lines of dark yellow. Long twigs and stalks of hay are carried up on top, probably for additional camouflage from the air. [Bundesarchiv]

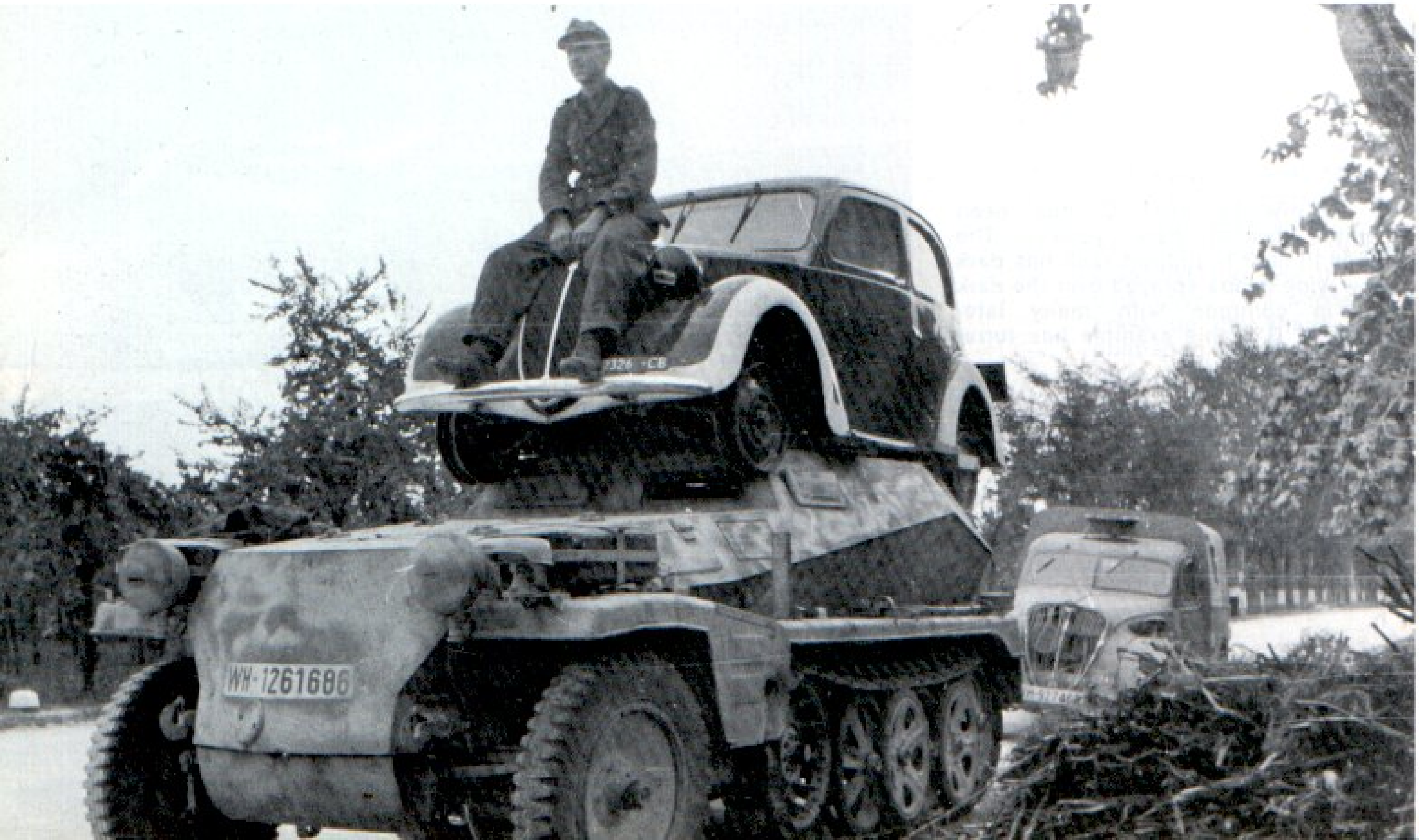


These "Hummel" self-propelled guns are painted in unusual schemes. The dark gray base coat had previously been sprayed with dark green. This time, both older colors have been sprayed with large patches and areas of the newer dark yellow. Several vehicles use foliage also. [Bundesarchiv]



This PzKpfw III ausf L in Russia has the same old scheme of dark gray with fine stripes of dark green oversprayed with dark yellow. The old colors are used as secondary shades. The numbers are black. [Bundesarchiv]

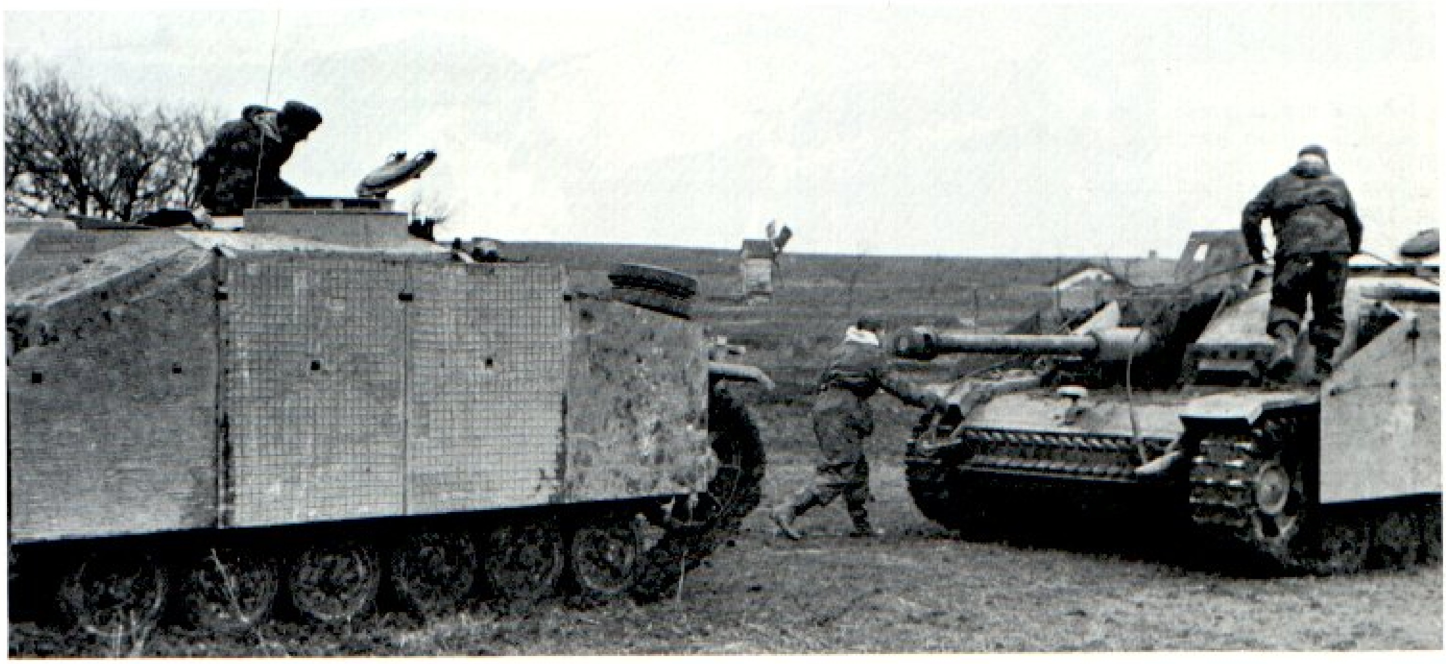
This SdKfz 250 halftrack in Italy displays exactly the same colors and patterns as vehicles seen in Russia. Dark yellow was sprayed on dark gray, and no special patterns or proportions of color have been used. More often the method of application determined the final appearance as much as anything else. [Bundesarchiv]



Zimmerit Paste

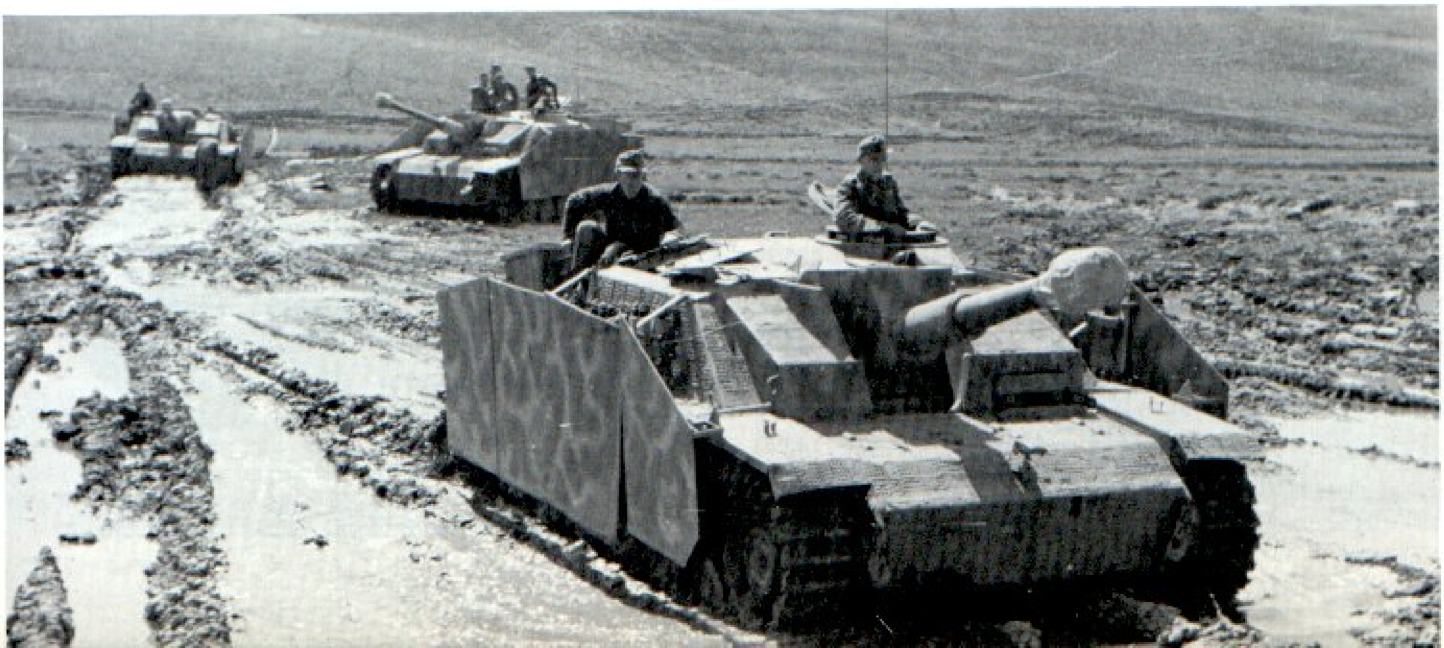
At the same time that the new dark yellow/olive green/red brown color system was coming into use, another material developed for use on vehicles appeared. This was "zimmerit", a rough cement plaster, which was intended to roughen the exterior surfaces of vehicles and prevent magnetic antitank charges used by the Russians from clinging to the metal.

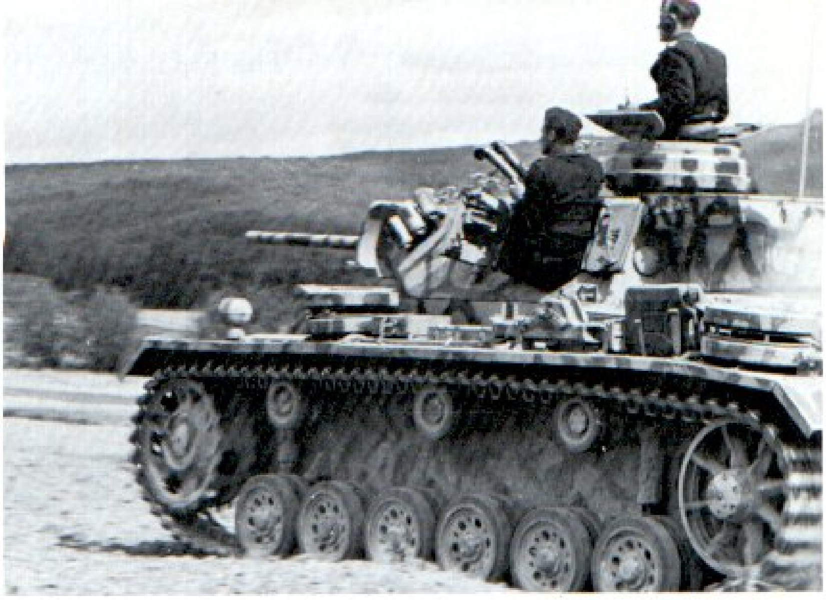
Zimmerit was a light neutral gray color plaster, and was applied to the vehicles in the factories before painting. It was applied to lower hull sides, front and rear plates, and usually on the sides of the upper superstructure and turret. Horizontal plates (roofs, engine decks, etc.) were not covered. On most vehicles, small rakes or patterned rollers were used to apply texture patterns to the zimmerit to make it more effective in repelling magnetic or sticky antitank charges. Since the zimmerit was painted over with the dark yellow base color, it did not affect the color directly except that the texture created small shadows which often made the color look darker and somewhat irregular. From early 1943, zimmerit was applied to most tanks and assault guns, but only rarely to armored S.P. guns, personnel carriers, or S.P. antitank guns. It was largely discontinued by early 1945.



The left vehicle in this photo has a rough coat of zimmerit on the side skirts. Note the different patterns on the front and middle sections. The other vehicle has no zimmerit, but does have cement on the front of the superstructure for increased protection.

These vehicles in Southern Russia, a Stu H. 42 [10.5 cm howitzer] and a Stu G III G are painted in a scheme of dark green over dark yellow. The sunlight shows very clearly the patterns in the zimmerit coat on the Stu H. 42 in the foreground. Many Stu G vehicles had this "waffle plate" pattern. [Bundesarchiv]





This PzKpfw III ausf M has a web of dark green brushed over the dark yellow base color. The color was usually darker when brushed than sprayed, but dilution of the pastes was as important as the method of application in determining the final colors.

The Final Years 1943-1945

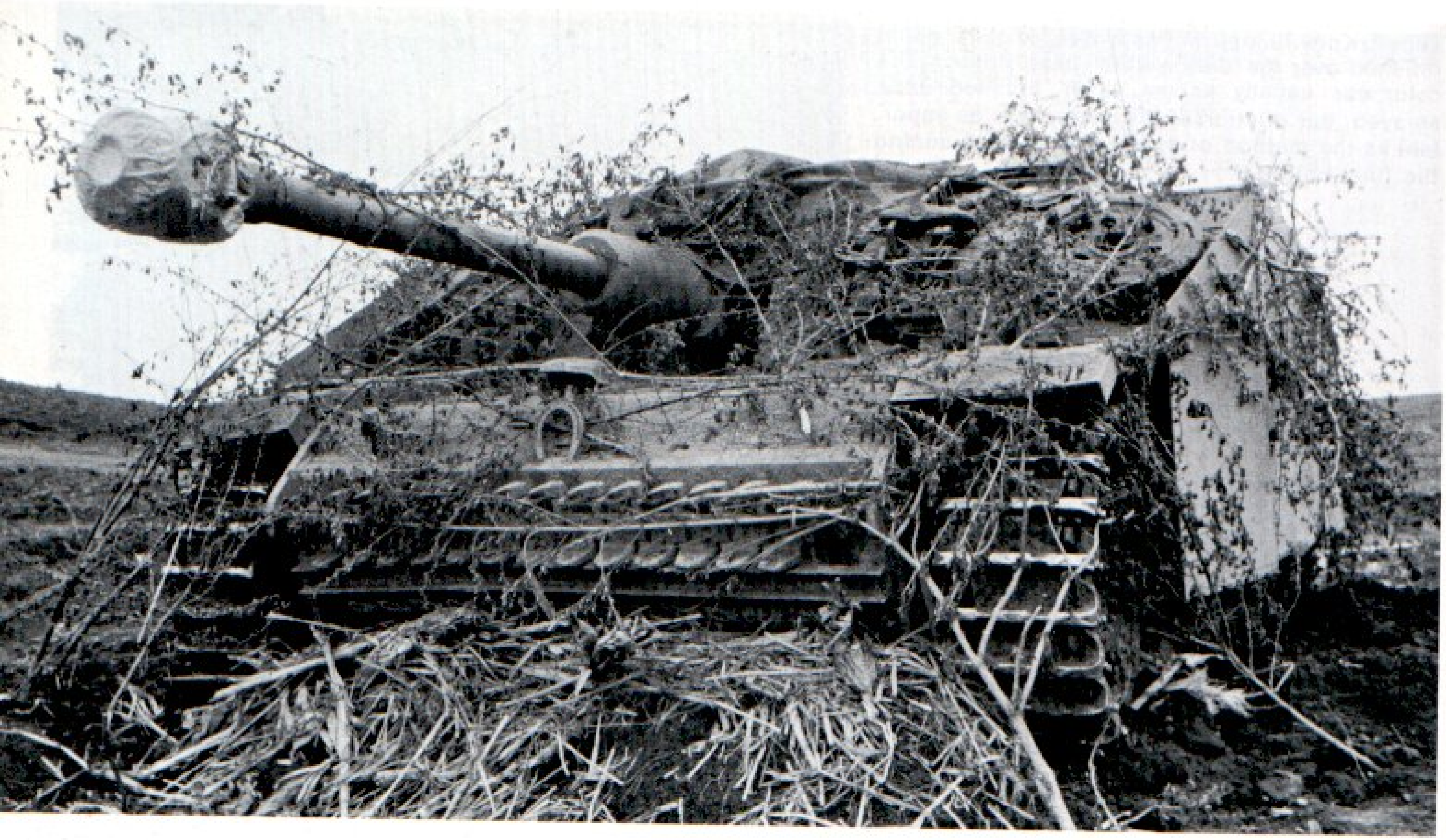
On paper, the new three-color system, utilizing the dark yellow base coat and the pastes for locally ordered alterations, seemed to be nearly perfect. Here was a scheme that allowed each unit to camouflage its vehicles to maximum advantage, depending on local conditions. Nonetheless, within a few months, the system was as chaotic as ever, and the high promise of this most flexible paint system was only infrequently realized. What had happened?

Several things combined to thwart the application of the new schemes. First, the difficulties of supplying scattered German units, many of them over a 1,000 miles from Germany, meant that the paints and paste colors were in short supply at most front lines. Again, ammunition, fuel, food, and replacements were more important. Second, many fighting units, in Russia especially, were engaged in some of the bitterest, fiercest fighting of the entire war, and had no time for repainting any vehicles - even division and rear area ordnance workshops were returning vehicles to action as soon as repairs were completed with only minimal repainting to protect new parts. Badly damaged tanks, normally sent home for rebuilding, were held by front line commanders who feared (correctly in most cases) that replacements would not be forthcoming. Thus cannibalization of wrecks resulted in many mixed color schemes; sometimes parts from three or more vehicles were needed to make one usable one.

Perhaps the greatest failing, though, was in the camouflage pastes themselves. They had been formulated so that either gasoline or water could be used to thin them for application, which was **normally** to be done with a spray gun carried in most vehicles and attached to engine-driven compressors. Unfortunately, the pastes proved to be unstable when mixed with water, and even the lightest rain, mist, or heavy dew caused these new colors to run together or wash off the vehicles completely. Gasoline had to be used to achieve a durable finish, and yet fuel shortages were the most critical problem facing German units during the last years of the war. Thus, as sufficient fuel was not available to use the pastes properly, many units had to use them with water, waste oil, contaminated fuel, or mixed with other paints. All of these expedient practices caused a tremendous variation in the appearance and durability of the paint schemes: sometimes a camouflage scheme might last only a few days, due to bad weather and improper application.

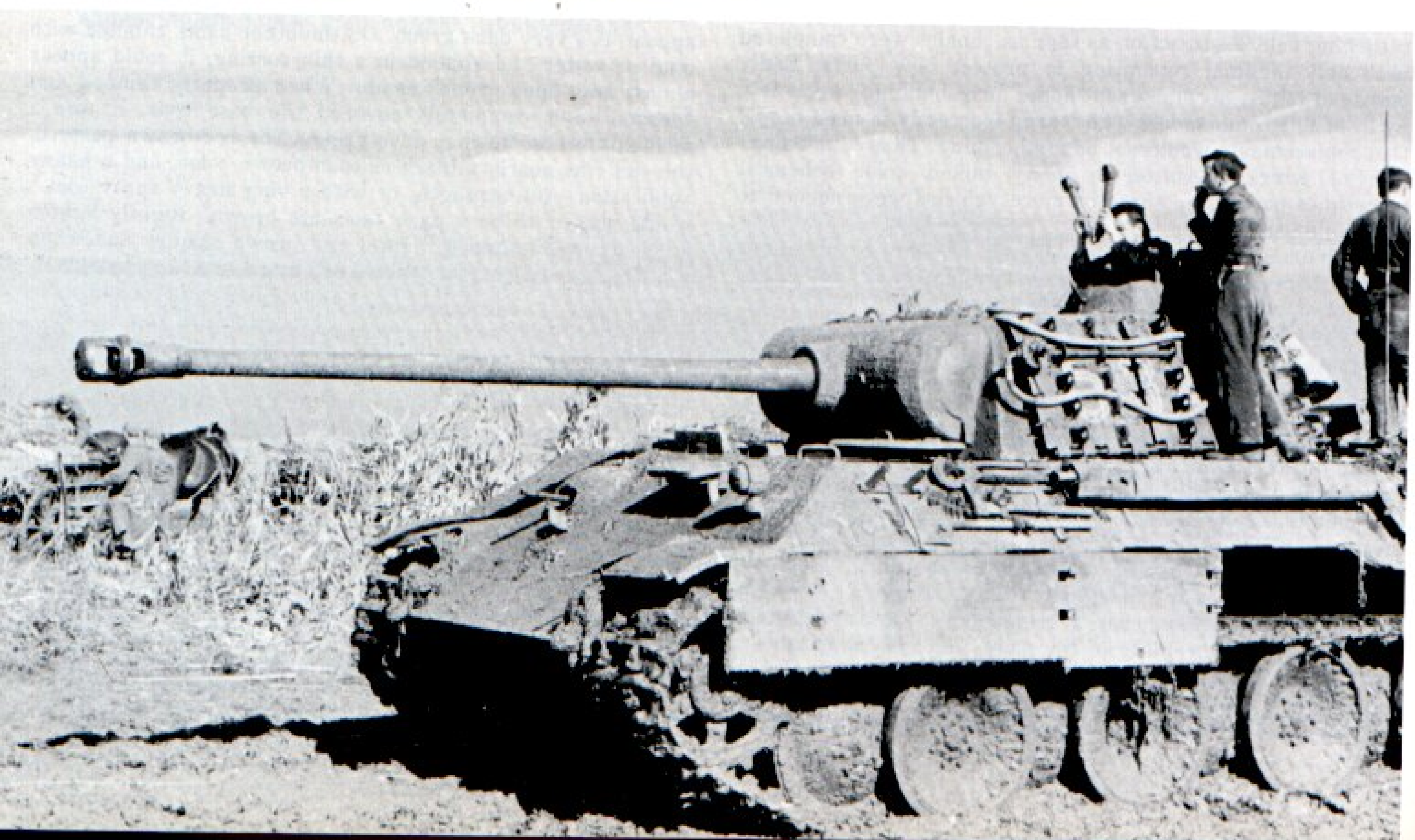
Individual units handled the problem of camouflage paints and pastes differently. Some unit commanders insisted on proper application with gasoline-thinned pastes and use of spray guns. Generally these units had small amounts of fuel that could be used for this. Units in occupied France, Western Europe, Germany, and training units near these countries often had sufficient time and fuel to follow the proper procedures. On the Russian front, things were frequently at a nearly desperate state of acute shortages, and the pastes in particular were often not sprayed or mixed with fuel. Instead, water, waste oil, or mud would be used, often by mixing the paint or pastes, then applying them with rags, brooms, brushes, or mops. Many crews simply slopped the paint onto the equipment and smeared it around in irregular patterns when time didn't permit a thorough painting. A great many vehicles never received any paste colors at all, remaining in overall dark yellow, sometimes covered with applications of local mud or foliage.

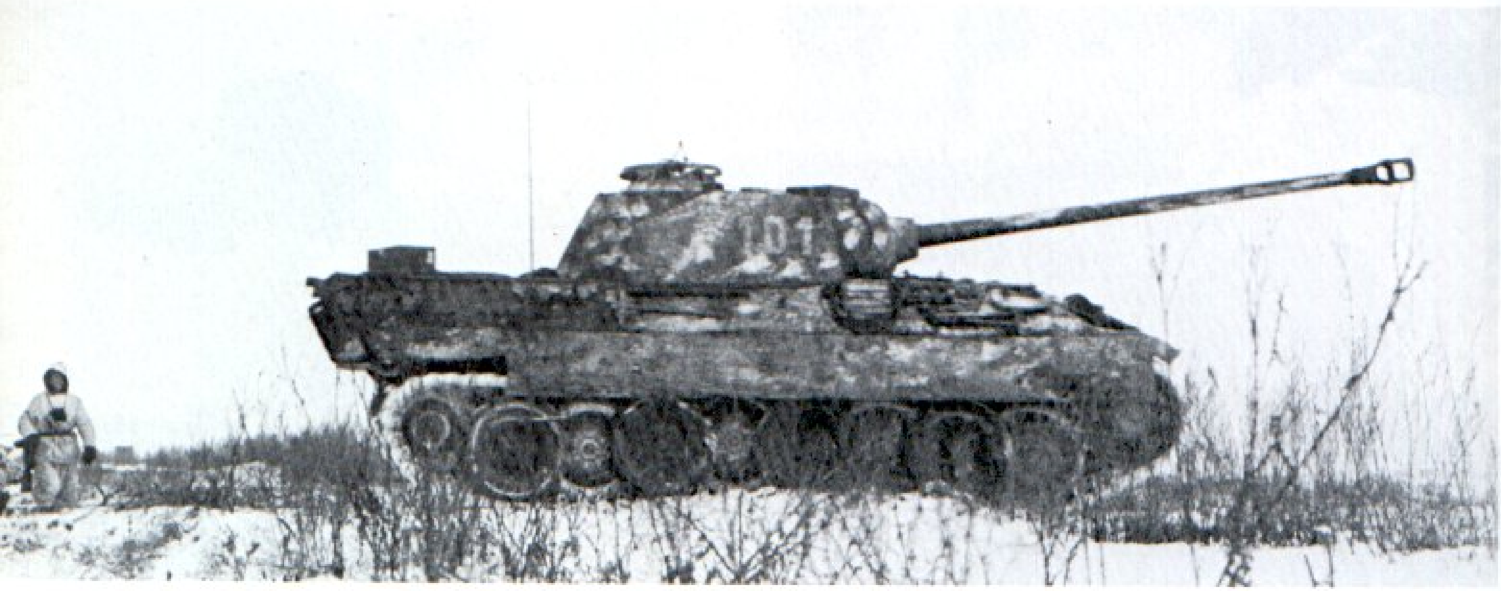
It should be noted here that because of the methods of application, and the concentrated nature of the paste paints, the colors were so varied that standard references were impossible. The olive green paste in the can was nearly black - when scrubbed full strength onto a vehicle finish, it would often appear as a **very** dark green. On the other hand, thinned with mud or water and applied in a thin coating, it could appear almost as a "pea green" shade. When properly thinned and sprayed so it completely covered the base coat, it was a medium-dark somewhat olive green. The red-brown paste in the can was nearly a black-maroon-brown color, and a heavy application - full strength, or with a very heavy spray coat - would appear to be a dark chocolate brown. Slightly lighter applications resulted in lighter red brown shades, and when used in a thin coating, or when faded by the sun, the red brown was various shades of light brick-red. Add to this the effects of water-thinned pastes running together, or the application of dark yellow paste over the other colors to cover them, and the appearance of the camouflage finish could be at any extreme, or at any point within the extremes. Many of the various "odd" colors reported on German tanks during the war (chocolate brown, brick red, light greens) are very likely variations of the paste colors. There was very little standardization, but occasionally complete units would be properly painted and marked as they were equipped or rebuilt after extensive losses. Generally, most repainting was done at unit ordnance workshops, or by individual crews during lulls in action. Photographs do show that spray equipment was used more frequently than any other method, especially in Western Europe and Italy. Even in Russia, a large number of vehicles were spray painted initially, but subsequent repairs and changes were not always done "by the book".



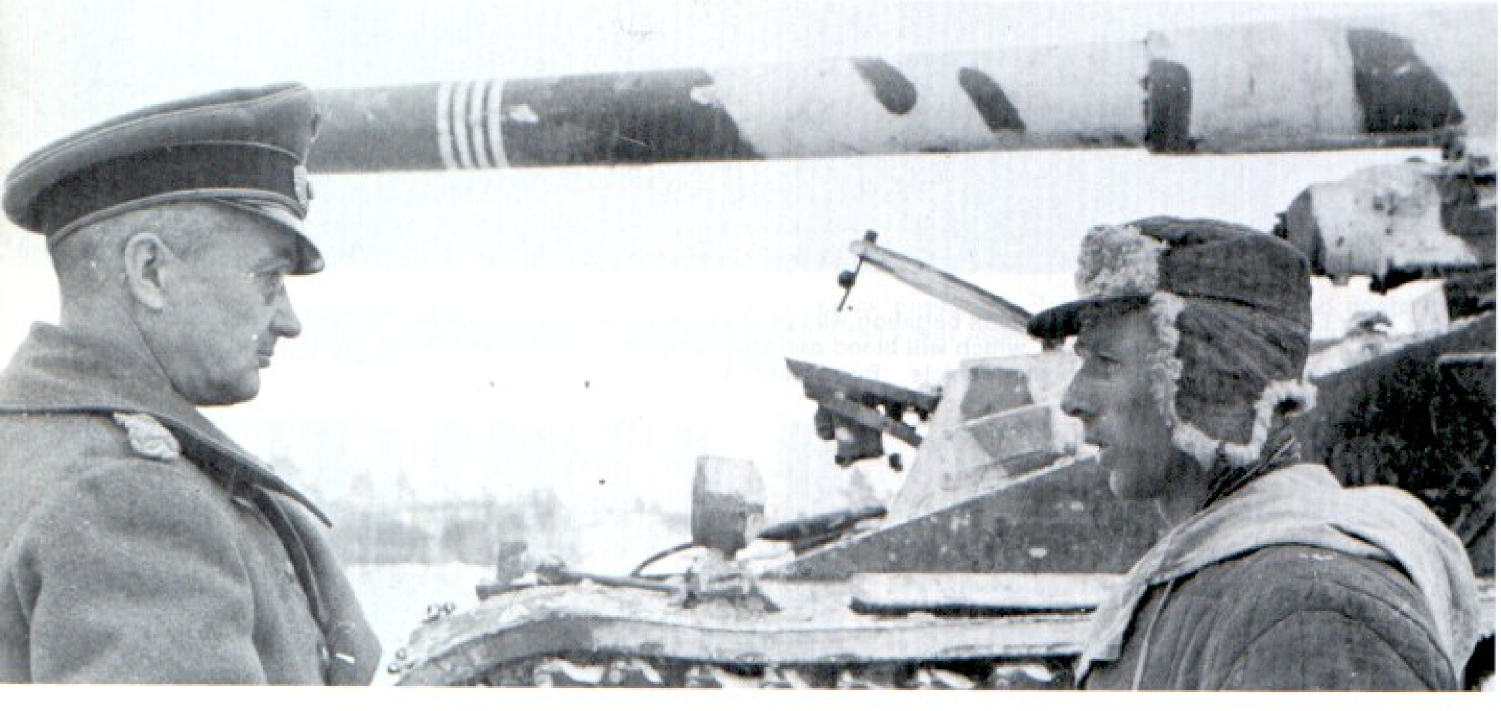
A StuG III ausf G in overall dark yellow, in Russia, 1943. There are no second colors applied, and the main camouflage is provided by the foliage piled around the vehicle. A camouflage tarpaulin is spread on the roof for more effective concealment.

This Panther ausf A in southern Russia, 1943, sits in the muck brought by late summer rains. Mud coats the glacis, mantlet, gun barrel, and the chassis is covered with a thick wet layer of ooze. The tank's colors are dark yellow with some overspray in red brown. [Bundesarchiv]

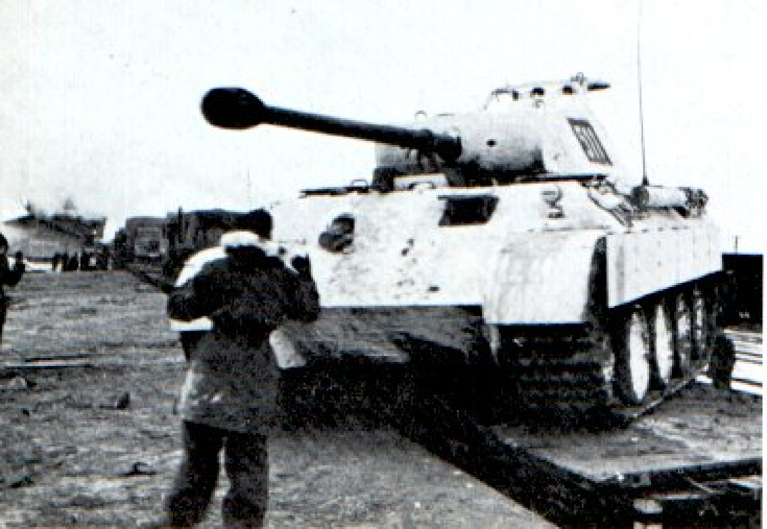




This Panther ausf A in the northern sector of Russia has received a very hasty patch painting in white, possibly resulting from lack of paint supplies.

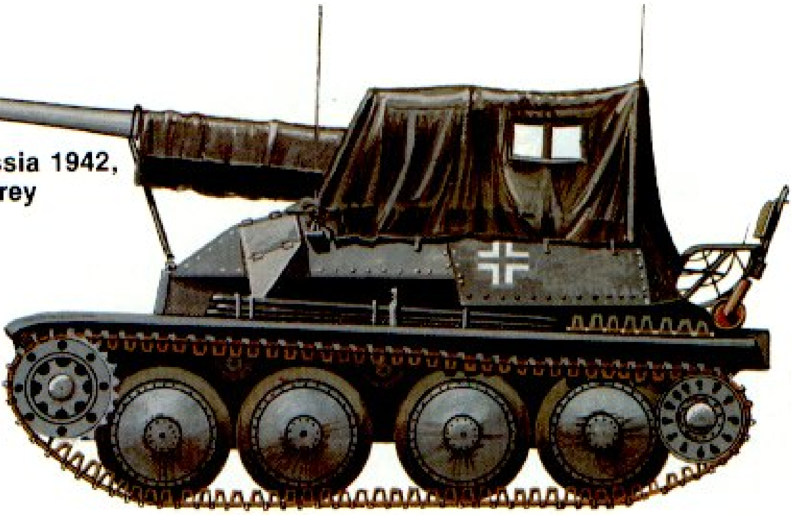


This "Rhinoceros" self-propelled 8.8 cm gun shows the use of olive green and red brown pastes applied over the white paint to breakup the vehicle's shape. The four "kill" rings on the barrel are white. [Bundesarchiv]

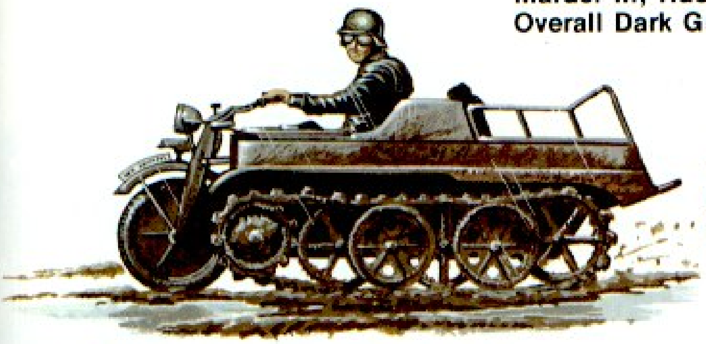


This brand new Panther ausf A is painted dark yellow overall. On top of this, a solid coat of white winter paint has been applied at the shipping depot. This is a very contrasty, dark photo, which makes the dark yellow patch around the white turret number seem darker than it really is. This method of painting turret numbers was only one of many styles. [Bundesarchiv]

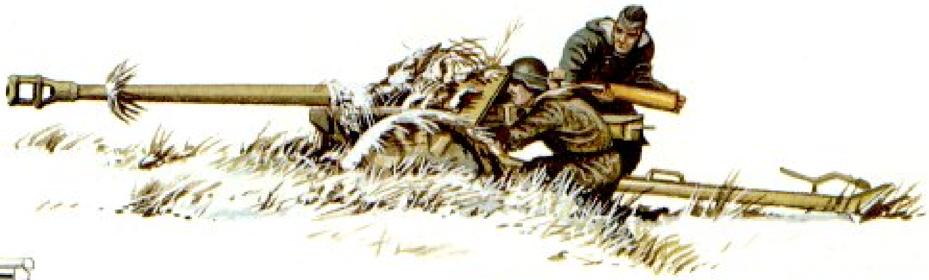
Russian Campaign 1942-1943



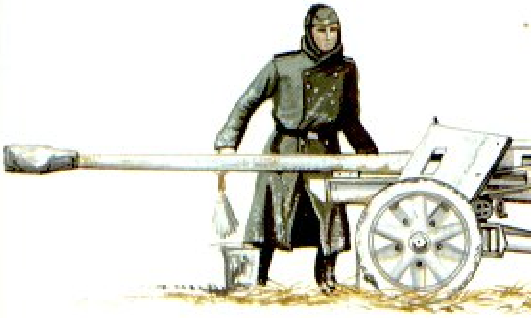
Marder III, Russia 1942,
Overall Dark Grey



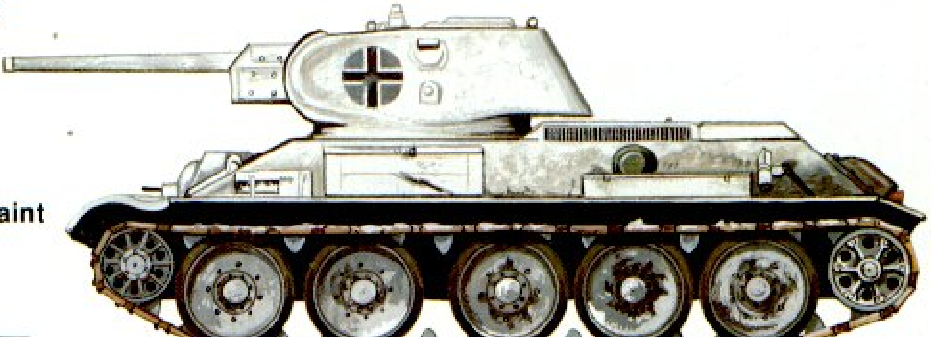
SdKfz 2 [NSU Hk101 Kettenkrad],
Russia 1942
Overall Dark Grey
with heavy coat of wet mud



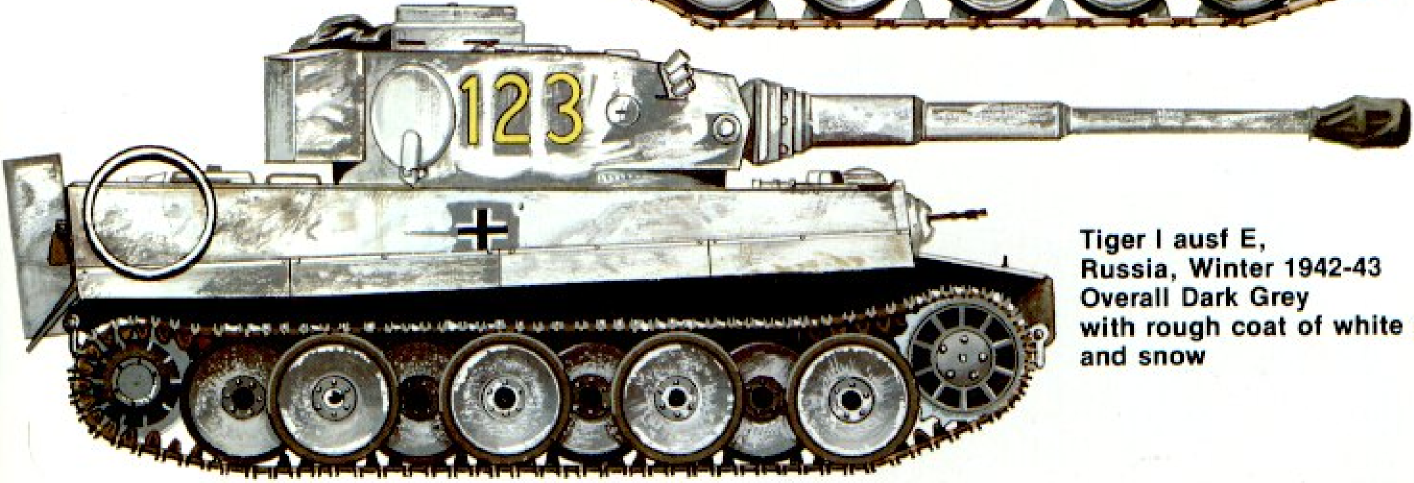
75mm Pak 40, Russia, Winter 1942-43
Overall Dark Yellow
with straw and foliage to hold snow



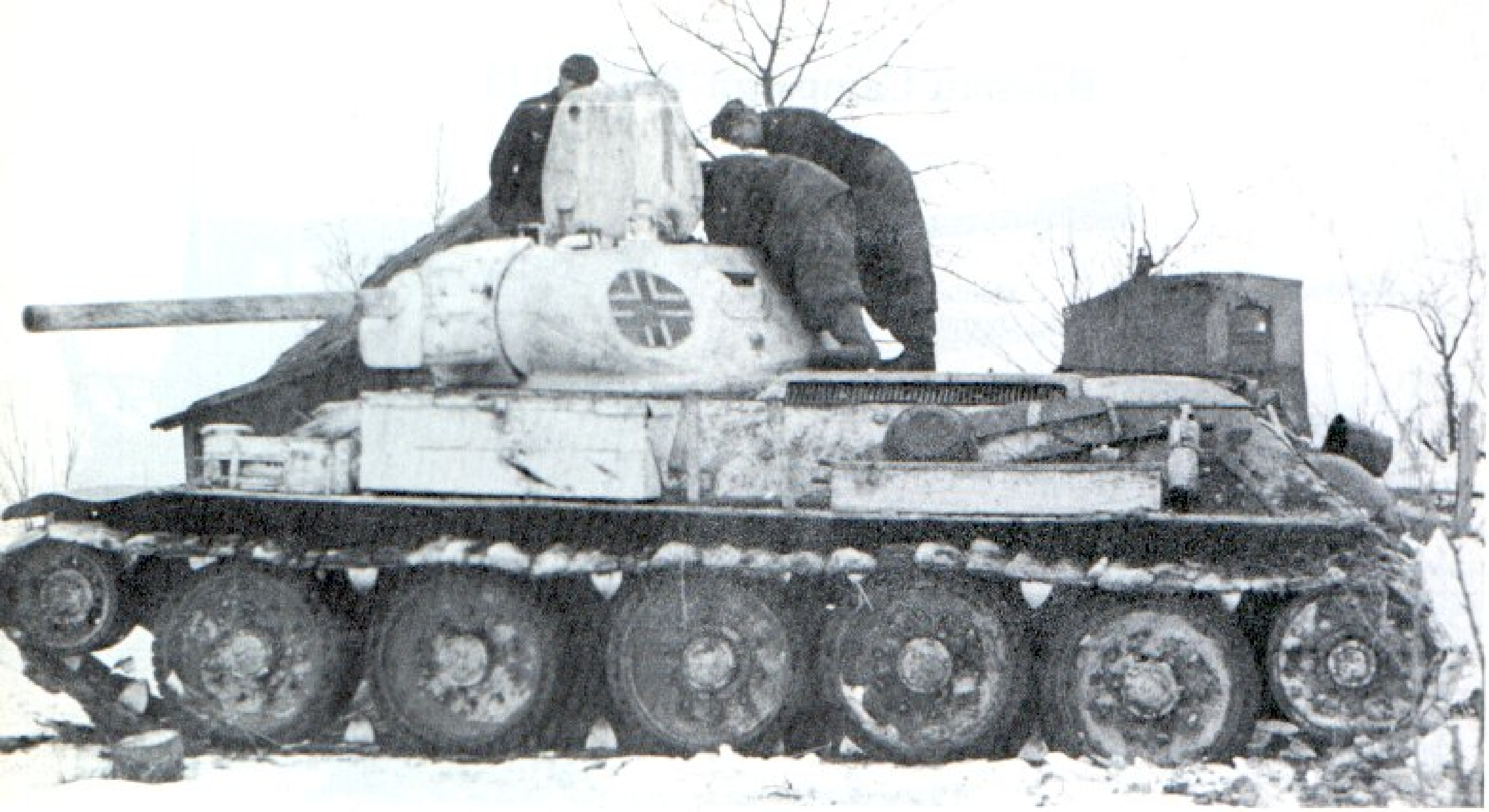
75mm Pak 40, Russia, Winter 1942-43
Overall Dark Yellow
with rough splatter of whitewash



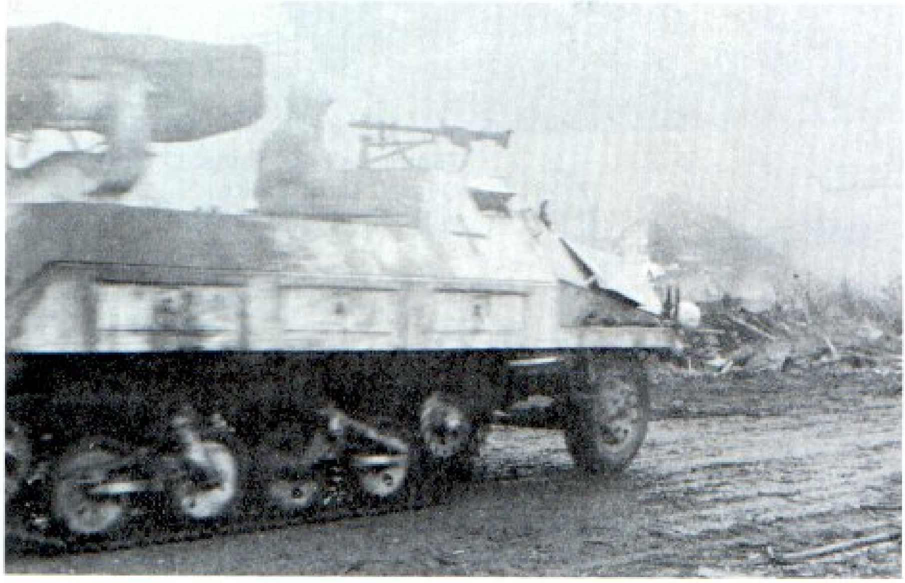
Captured T-34/76/42,
Russia, Winter 1942-43
Overall Dark Grey with white paint



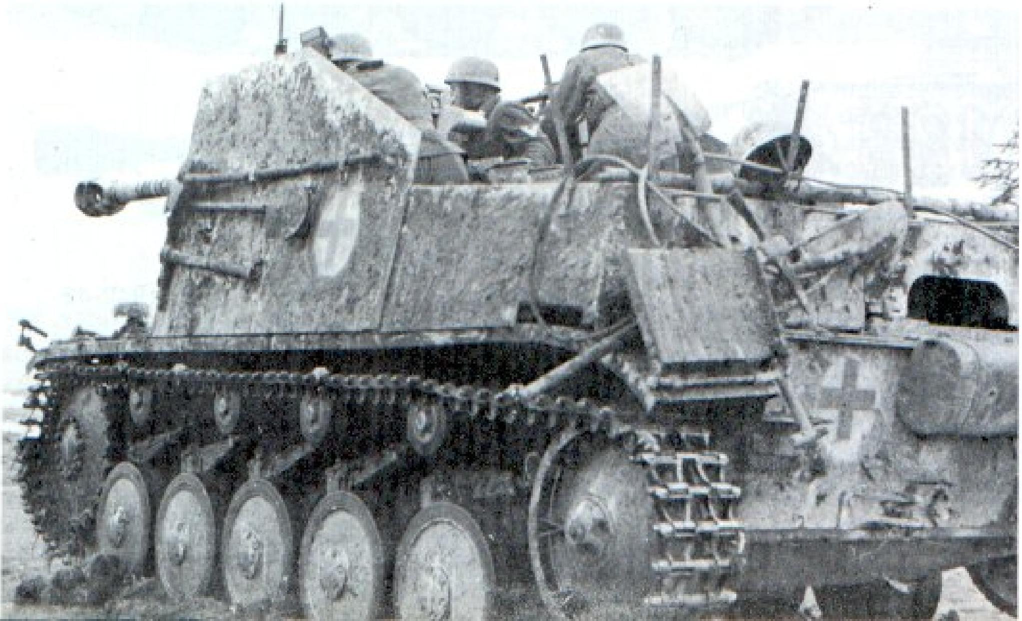
Tiger I ausf E,
Russia, Winter 1942-43
Overall Dark Grey
with rough coat of white paint
and snow



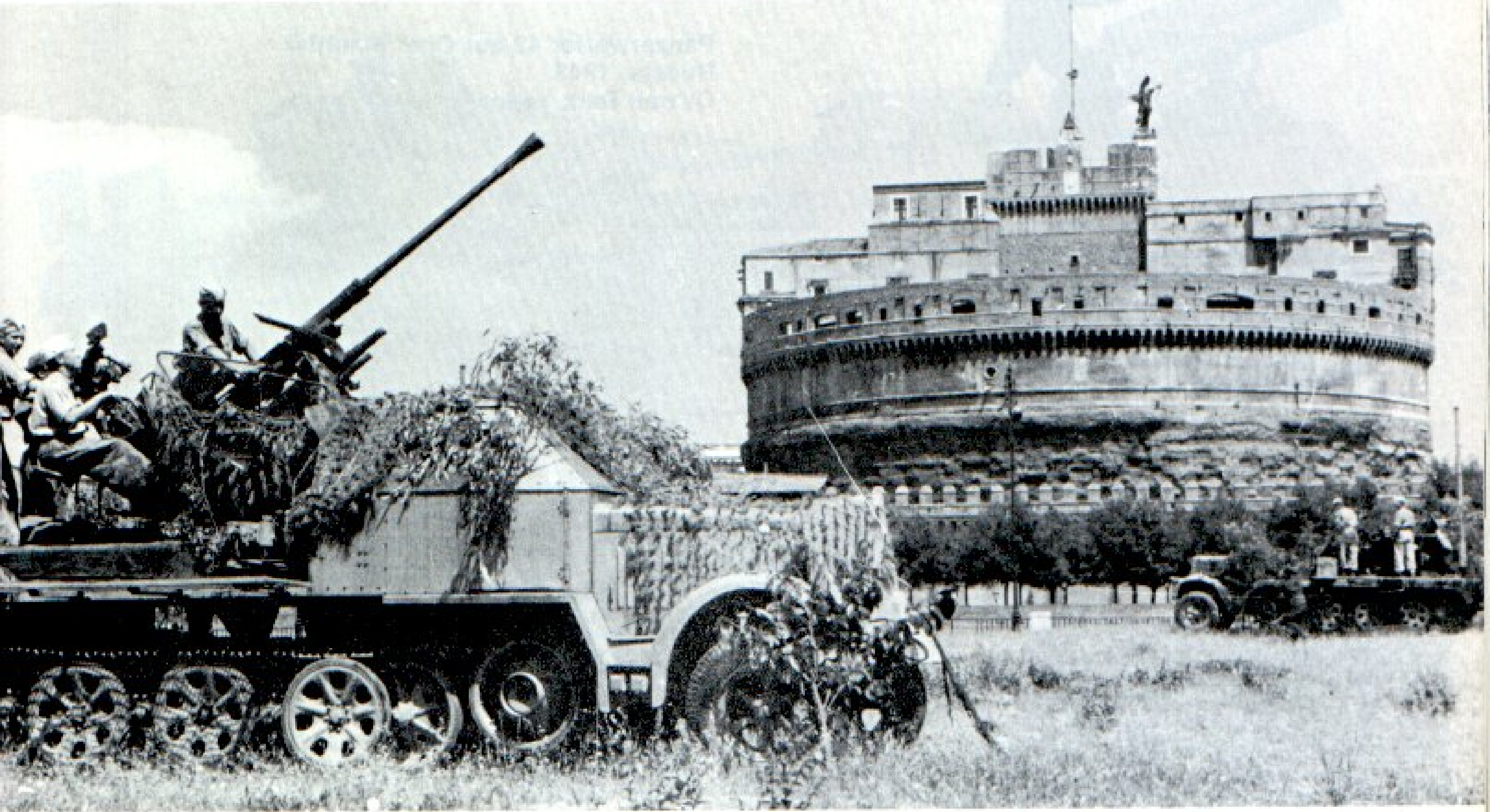
A T34/76 model 42 in a solid coat of white paint. The rear of the hull and the chassis have not been painted, and the insignia on the turret is in a circle of dark gray color left in the painting with white. [Bundesarchiv]



A snow-camouflaged Opel "Maultier" armored halftrack passes through a ruined Russian village. The white paint is badly worn away from the rear, probably by the effect of firing the 15 cm rocket projectiles. [Bundesarchiv]

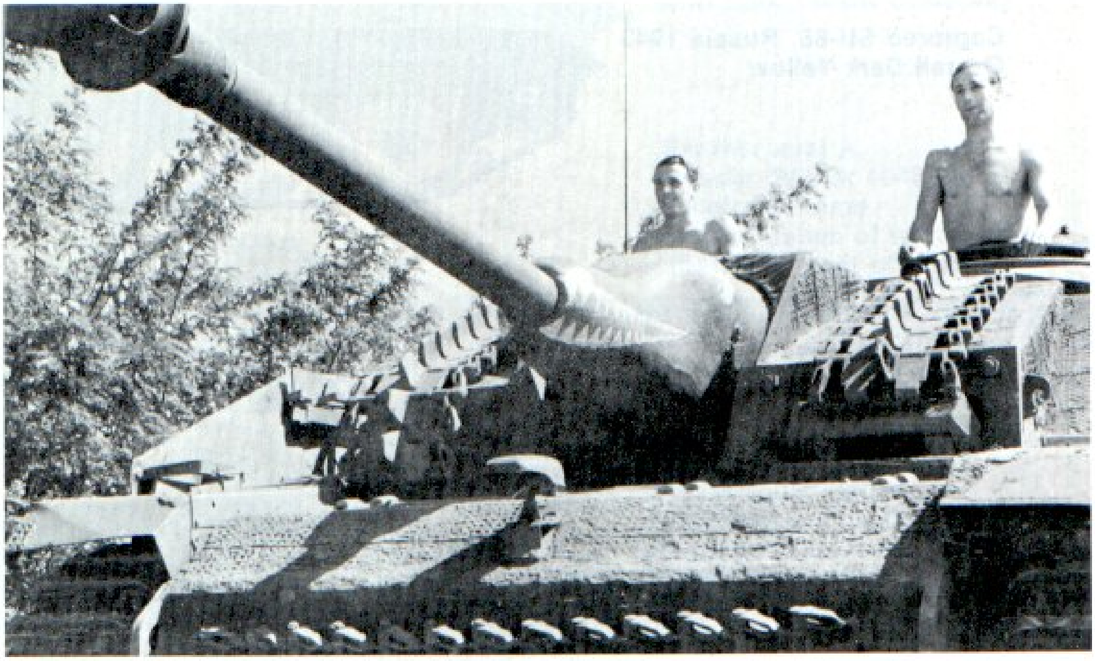


This Luftwaffe Marder II has been painted in snow camouflage over a dark yellow base. To hide the white paint, wet mud has been smeared over the whole vehicle. Note the insignia, left untouched by the white paint and the mud. [Bundesarchiv]



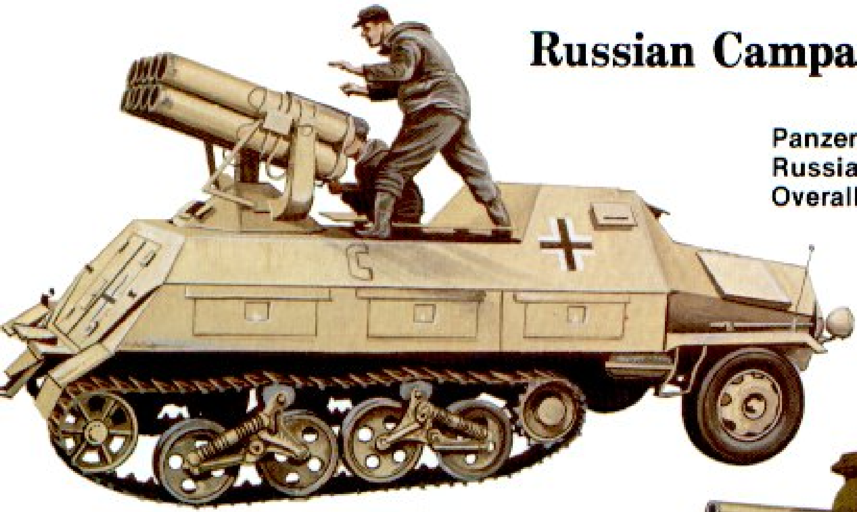
Two SdKfz 7/2 self-propelled flak mounts in Rome, 1944. Both are finished in dark yellow, and foliage is used as a second color, and also to break up the shapes of the vehicles. [Bundesarchiv]

1944 saw a further strain on German supplies as the Allied bombing offensive caused more and more disruption in deliveries of materials. Units in Russia were constantly engaged in combat, and often had to be moved from one sector to another. As in 1943, the paint system was marked by a **lack** of system, and many variations in colors, patterns, and application were found. Occasionally, vehicles used for special purposes (reconnaissance, etc.) were painted in special schemes (overall green has been mentioned) but again these colors depended entirely on the local terrain conditions, and orders usually issued at the unit level.

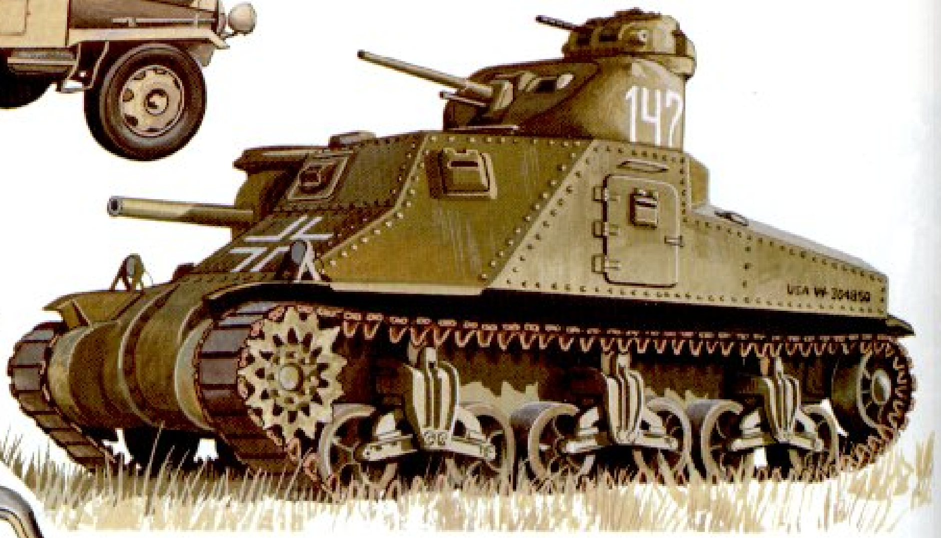


This StuG III ausf G is in overall dark yellow. The "Waffle plate" pattern in the zimmerit can be seen clearly. The mouth and eyes on the cast mantlet are in red and white.

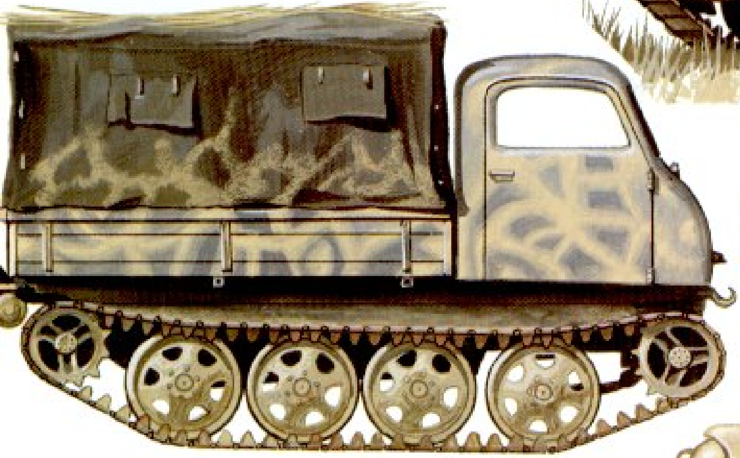
Russian Campaign 1943



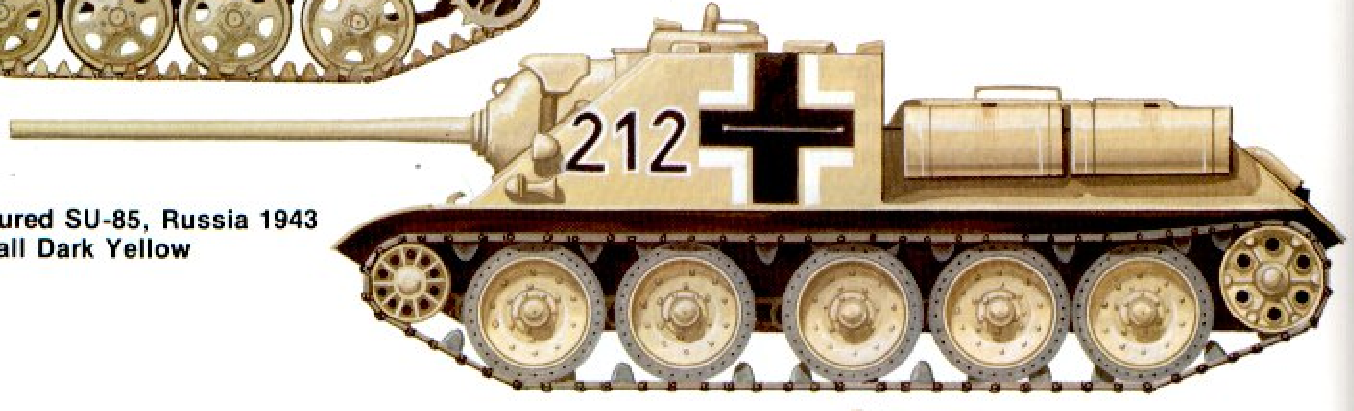
Panzerwerfer 42 auf Opel Maultier
Russia, 1943
Overall Dark Yellow



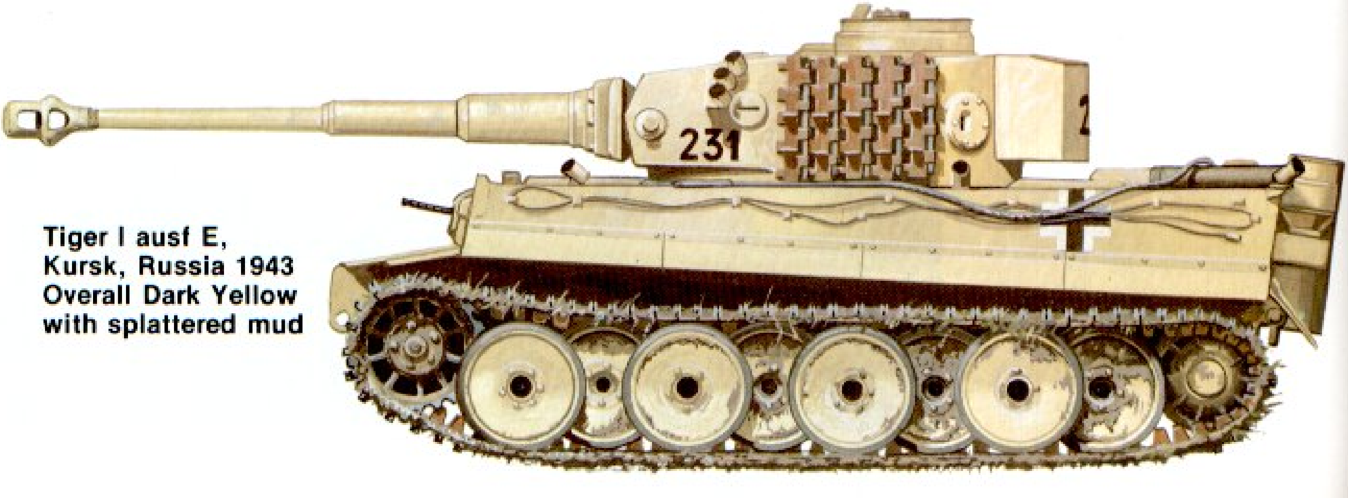
Captured US M3 Lee,
Russia 1943
Overall Olive Drab
with light coat of dust



Steyr RSO, Russia 1943
Overall Dark Grey with Dark Yellow overspray

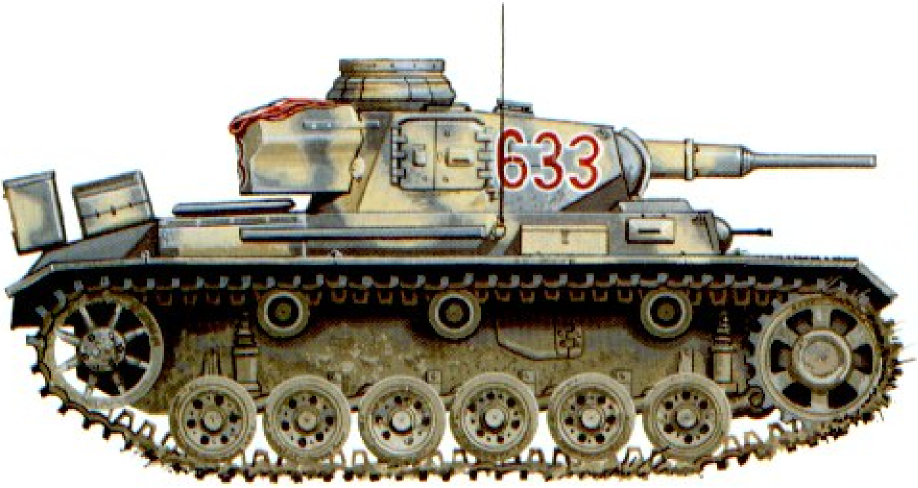


Captured SU-85, Russia 1943
Overall Dark Yellow

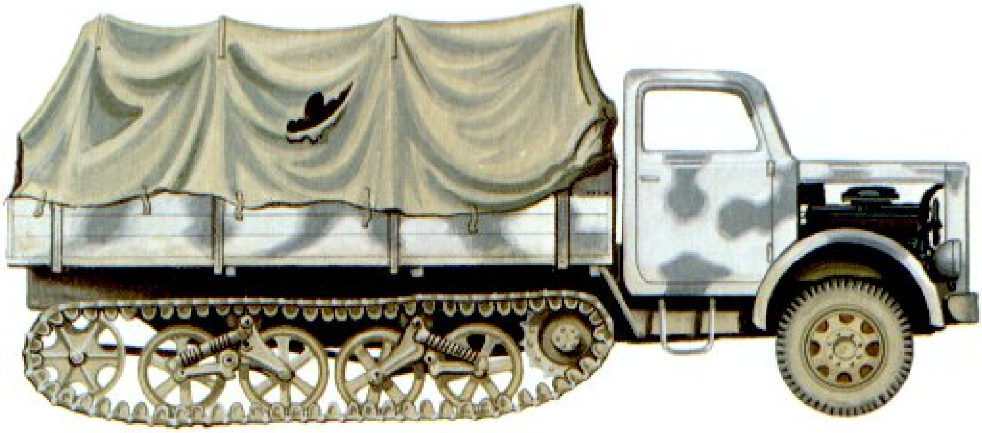


Tiger I ausf E,
Kursk, Russia 1943
Overall Dark Yellow
with splattered mud

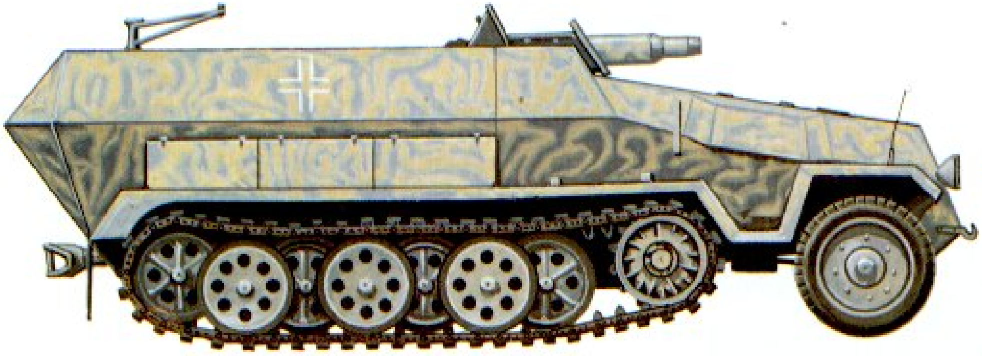
Russian Campaign 1943-1944



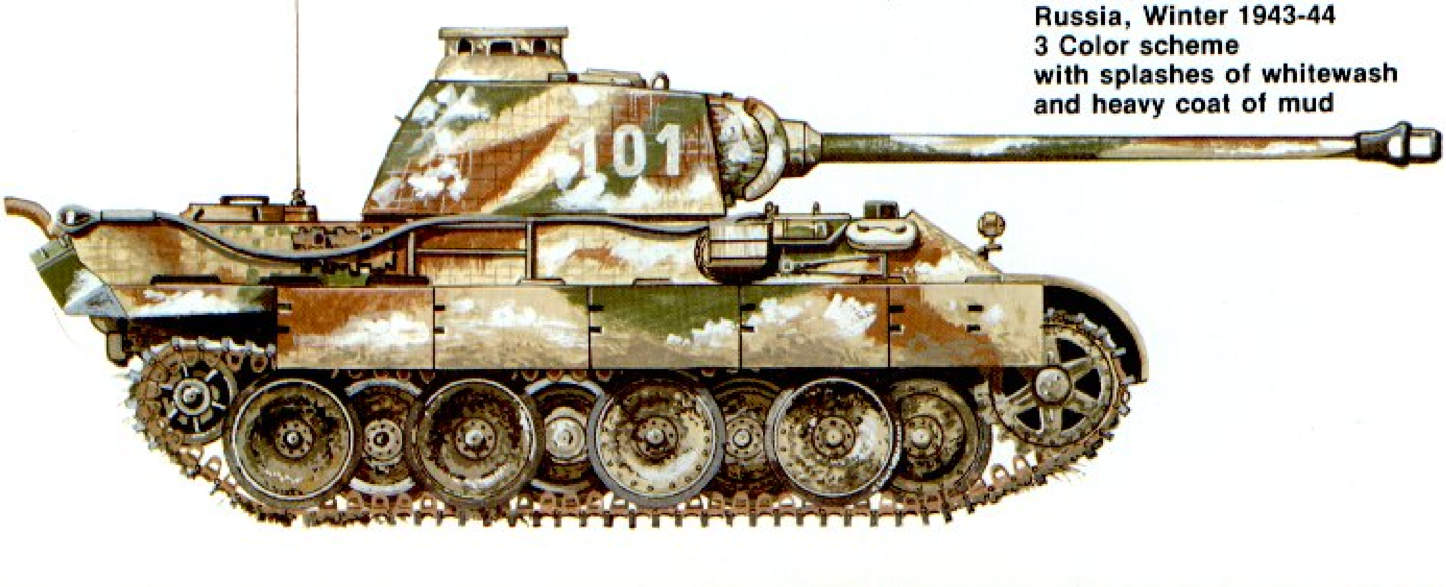
PzKpfw III ausf J,
Kursk, Russia 1943
Overall Dark Grey
with Dark Yellow overspray
and mud on chassis



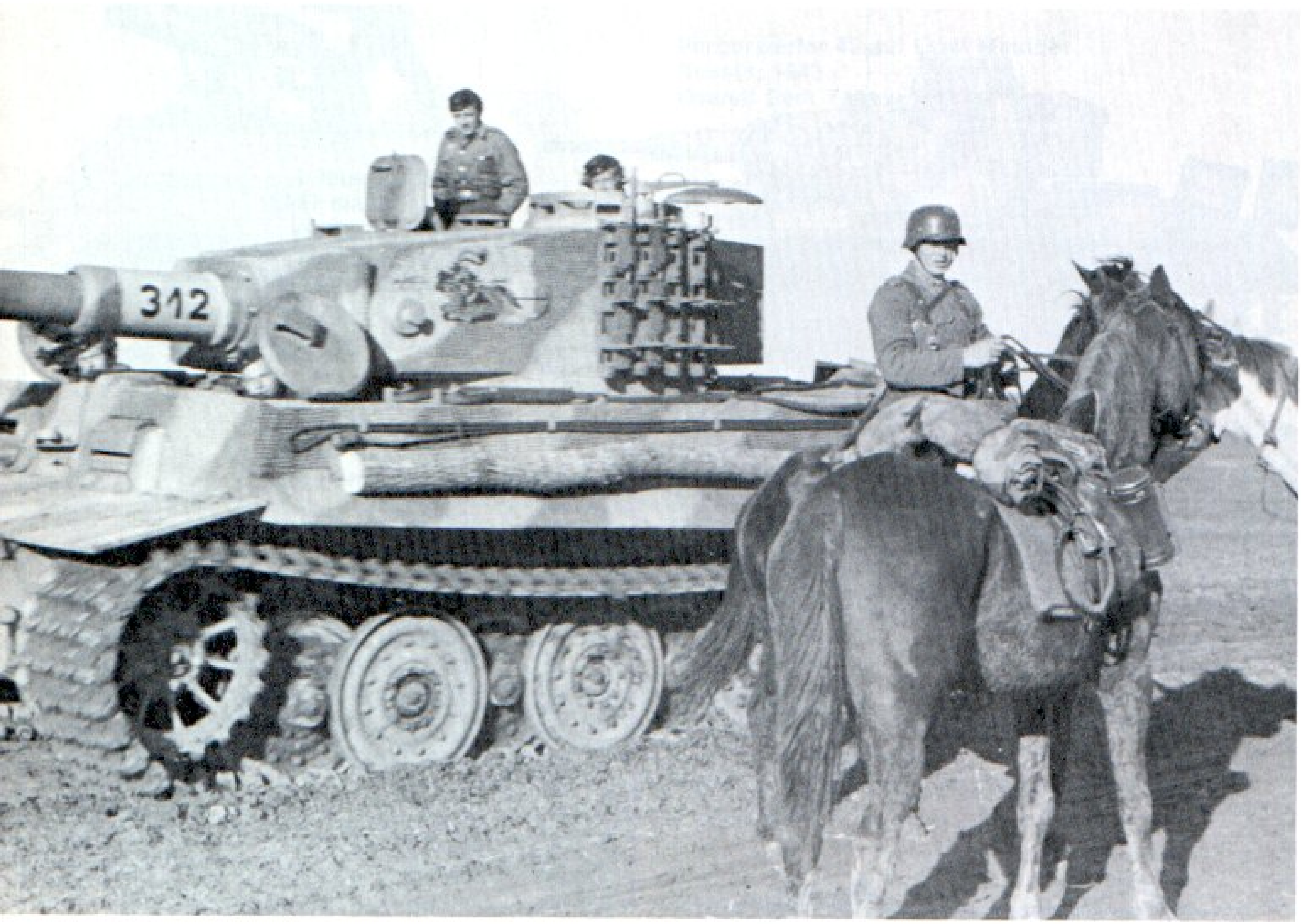
Magirus Maultier,
Russia 1943
Overall Dark Grey
with White winter overspray



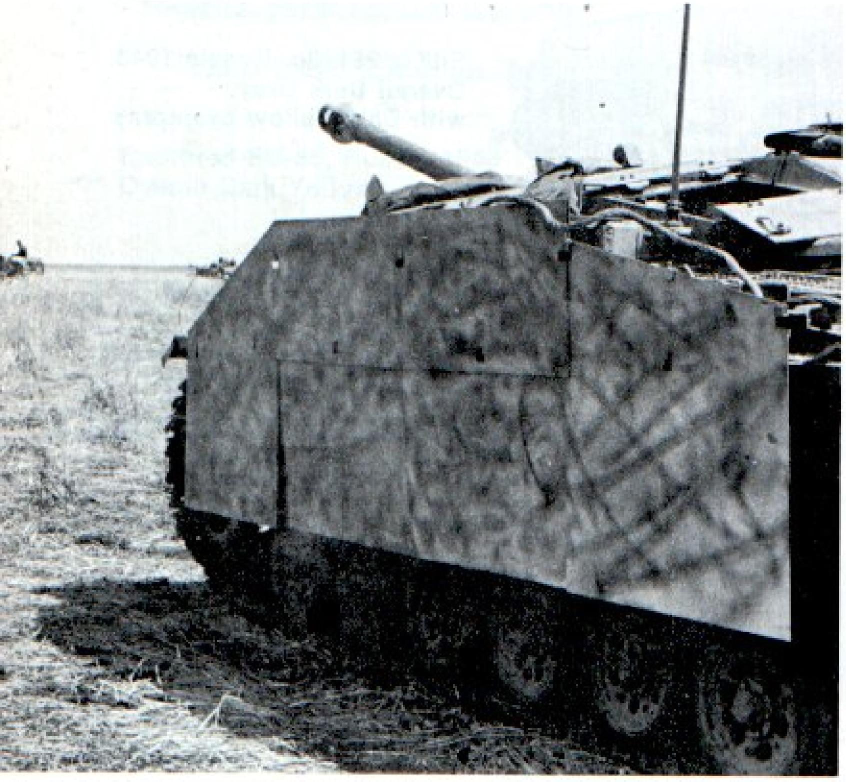
SdKfz 251/9c, Russia 1943
Overall Dark Grey
with Dark Yellow overspray



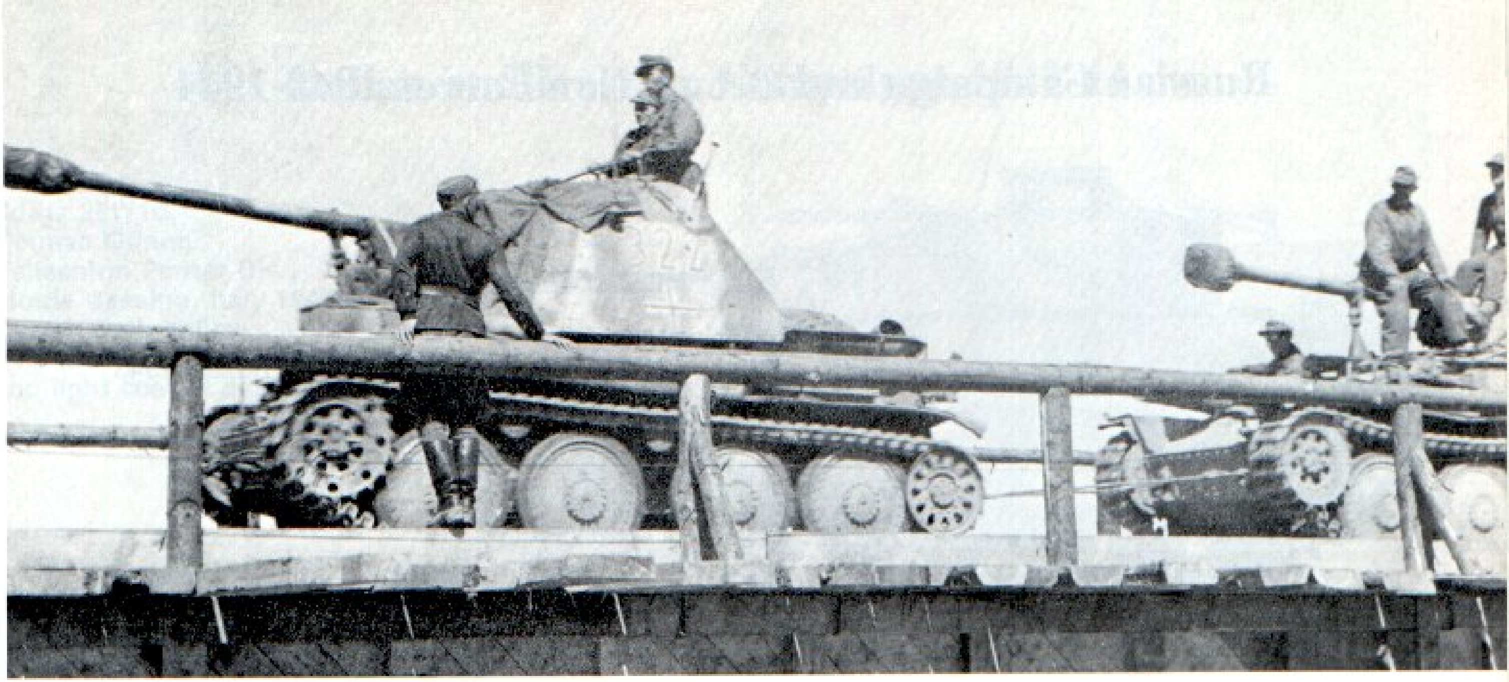
Panther ausf A,
Russia, Winter 1943-44
3 Color scheme
with splashes of whitewash
and heavy coat of mud



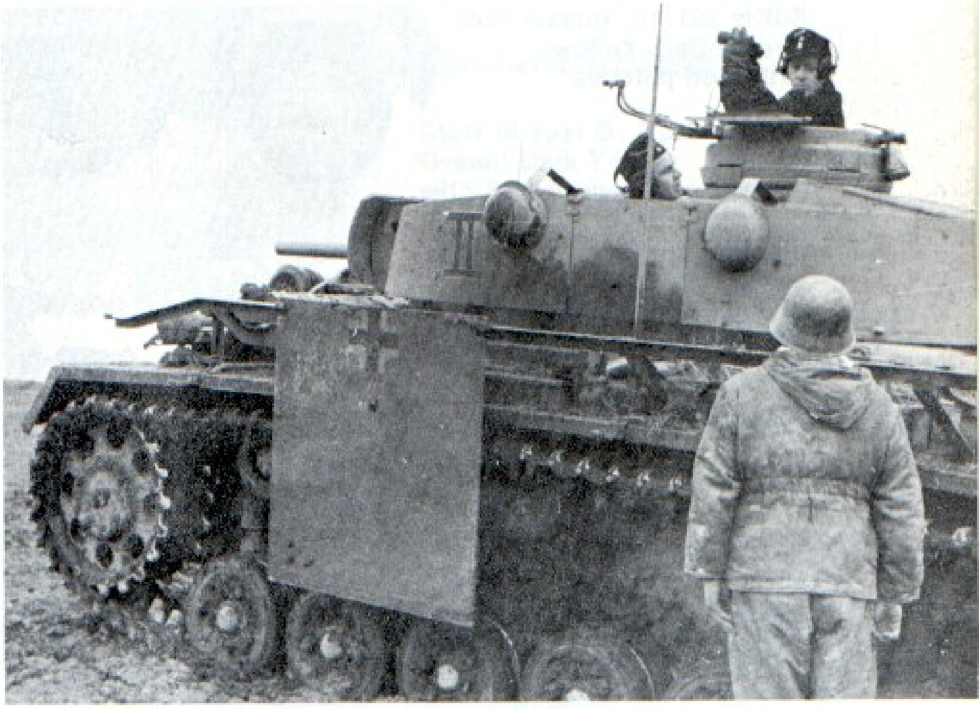
A late production Tiger I ausf E passes several cavalry horses, often used by rear area troops for police or partisan duties. The tank is dark yellow and red brown. The number on the gun is black. Note the neatly painted charging knight on the turret side. The horse is black, and the horse's long blanket is in red brown. Dark yellow is used as the background color. [Bundesarchiv]



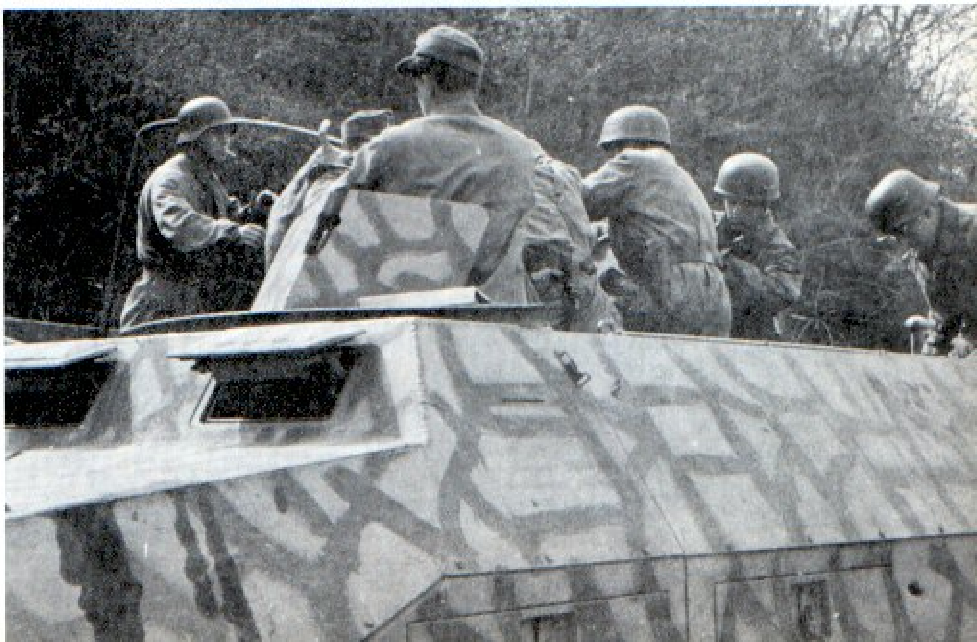
This StuG III ausf F in Russia is painted dark yellow. A very fast and rough pattern of sprayed strokes in olive green has been applied to the skirts. Very little time was allotted to this job. [Bundesarchiv]



Two Marder III's move across a bridge in Russia. The lead vehicle, an ausf H, is in dark yellow with sprayed patches of olive green and red brown - a very clean application of the paste colors. [Bundesarchiv]

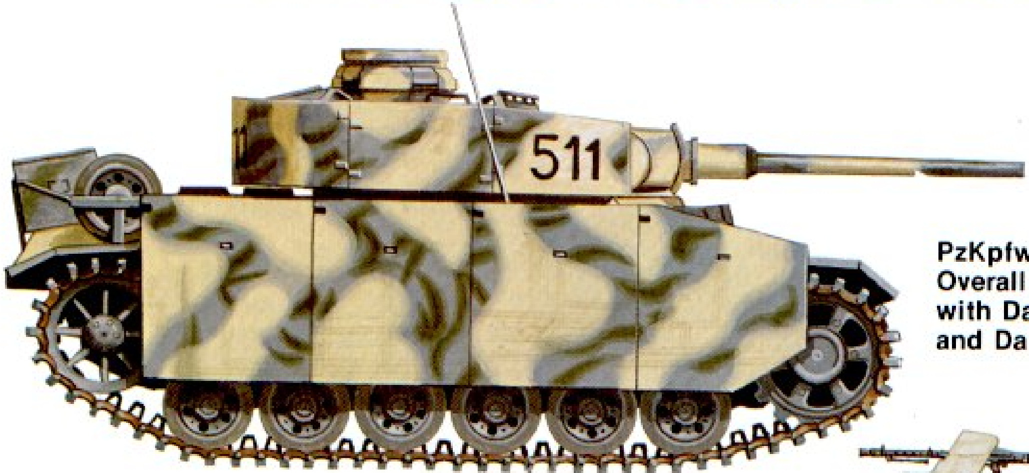


An upgraded early PzKpfw III, possibly an F or G, and used as a command tank, shows the effects of mud being thrown up on the vehicle. The dark areas are wet mud; the lighter areas are dust-covered dark yellow paint. The "II" is in red and white. [Bundesarchiv]

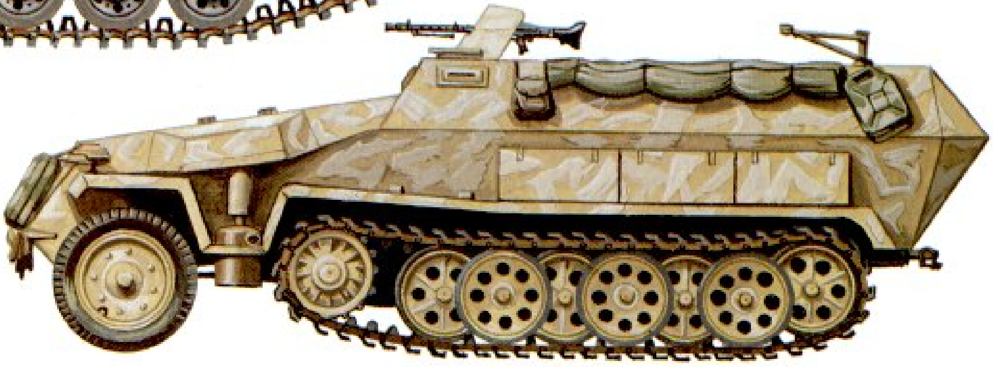


This SdKfz 251/1 ausf D, probably of "Hermann Göring" Panzer Division, is painted in dark yellow. A brushed on pattern of red brown stripes breaks up the flat sides, and blends in with the rocks and soil around Monte Cassino. [Bundesarchiv]

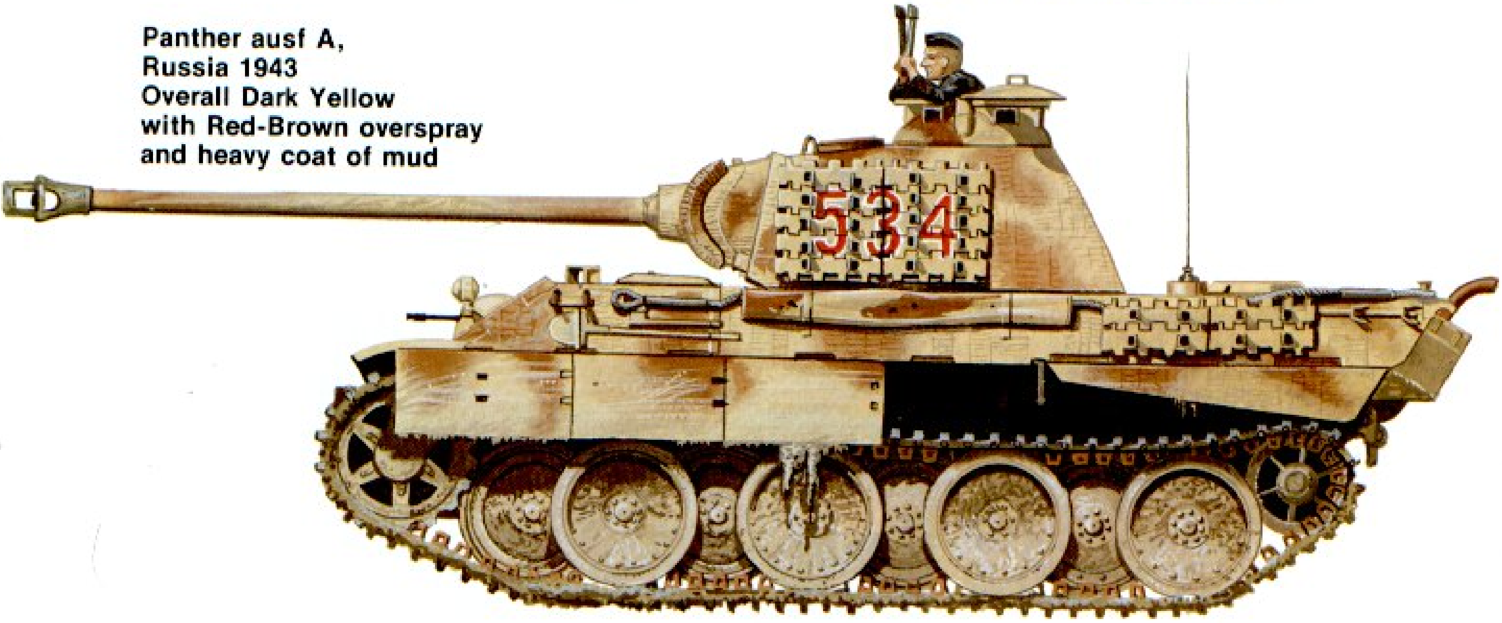
Russian Campaign and Occupation Forces 1943-1944



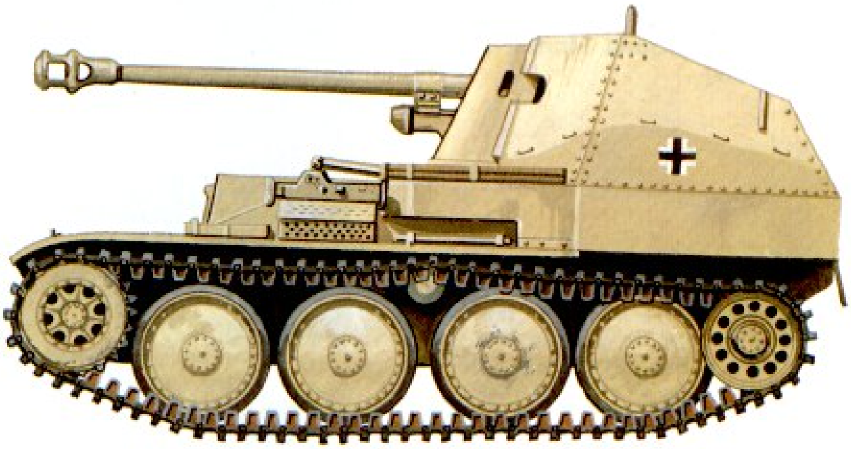
PzKpfw III ausf L, Russia 1943
Overall Dark Gray
with Dark Green stripes
and Dark Yellow overspray



SdKfz 251/1c, Russia 1943
Overall Dark Yellow
with mud patches

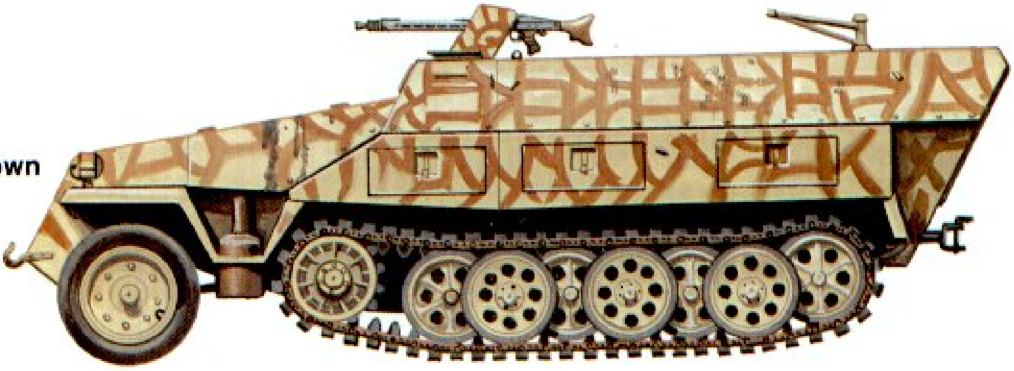


Panther ausf A,
Russia 1943
Overall Dark Yellow
with Red-Brown overspray
and heavy coat of mud

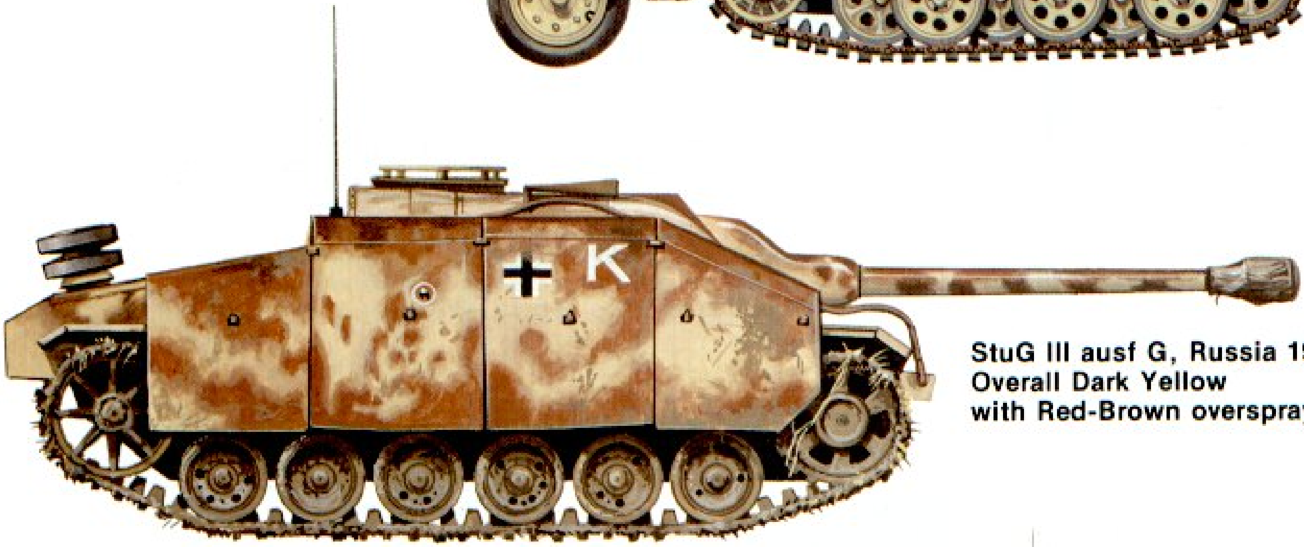


Marder III ausf M,
Flanders, Belgium 1944
Overall Dark Yellow
with light coat of dust

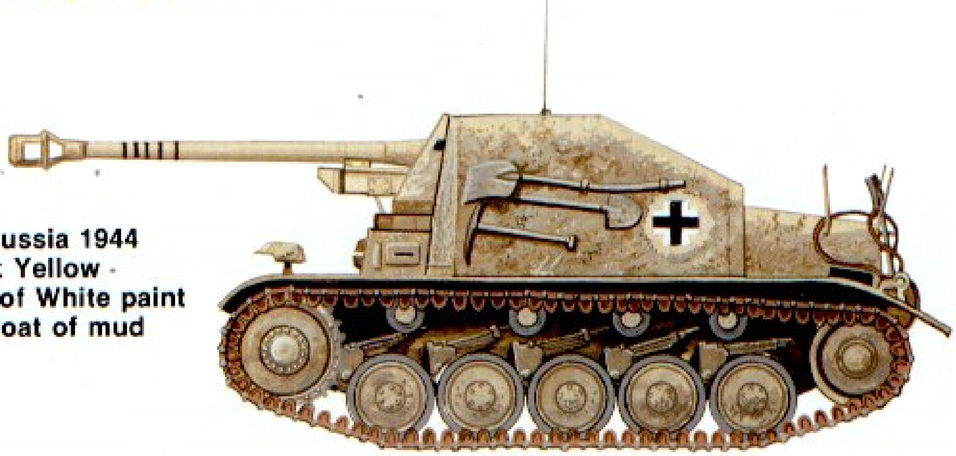
Italian and Russian Campaigns 1943-44



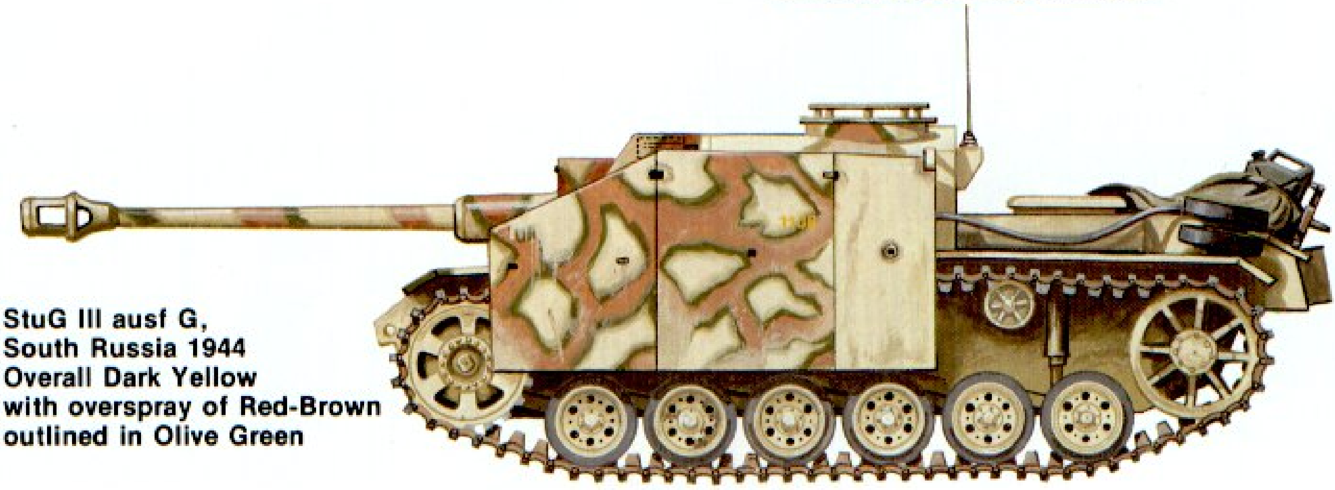
SdKfz 251/1d,
Herman Göring
Fallschirm Panzer Div.,
Monte Cassino, Italy 1943-44
Overall Dark Yellow
with brushed stripes of Red-Brown
and light coat of dust



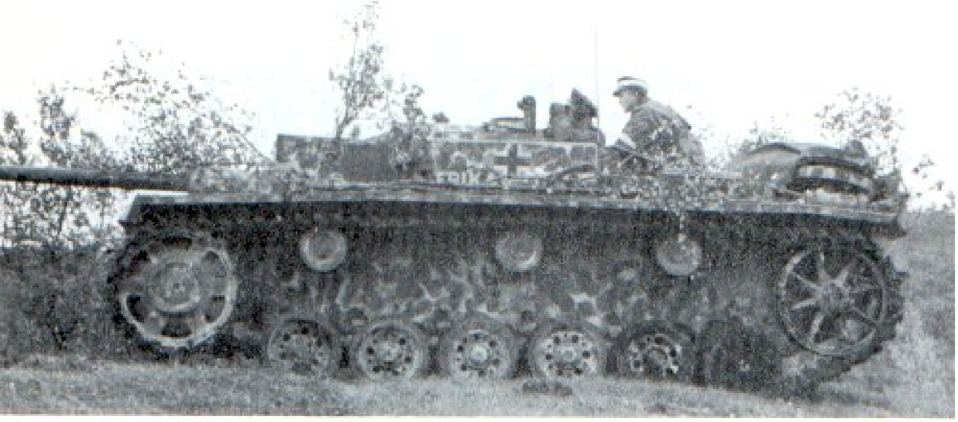
StuG III ausf G, Russia 1944
Overall Dark Yellow
with Red-Brown overspray



Marder II, Russia 1944
Overall Dark Yellow
with traces of White paint
and heavy coat of mud

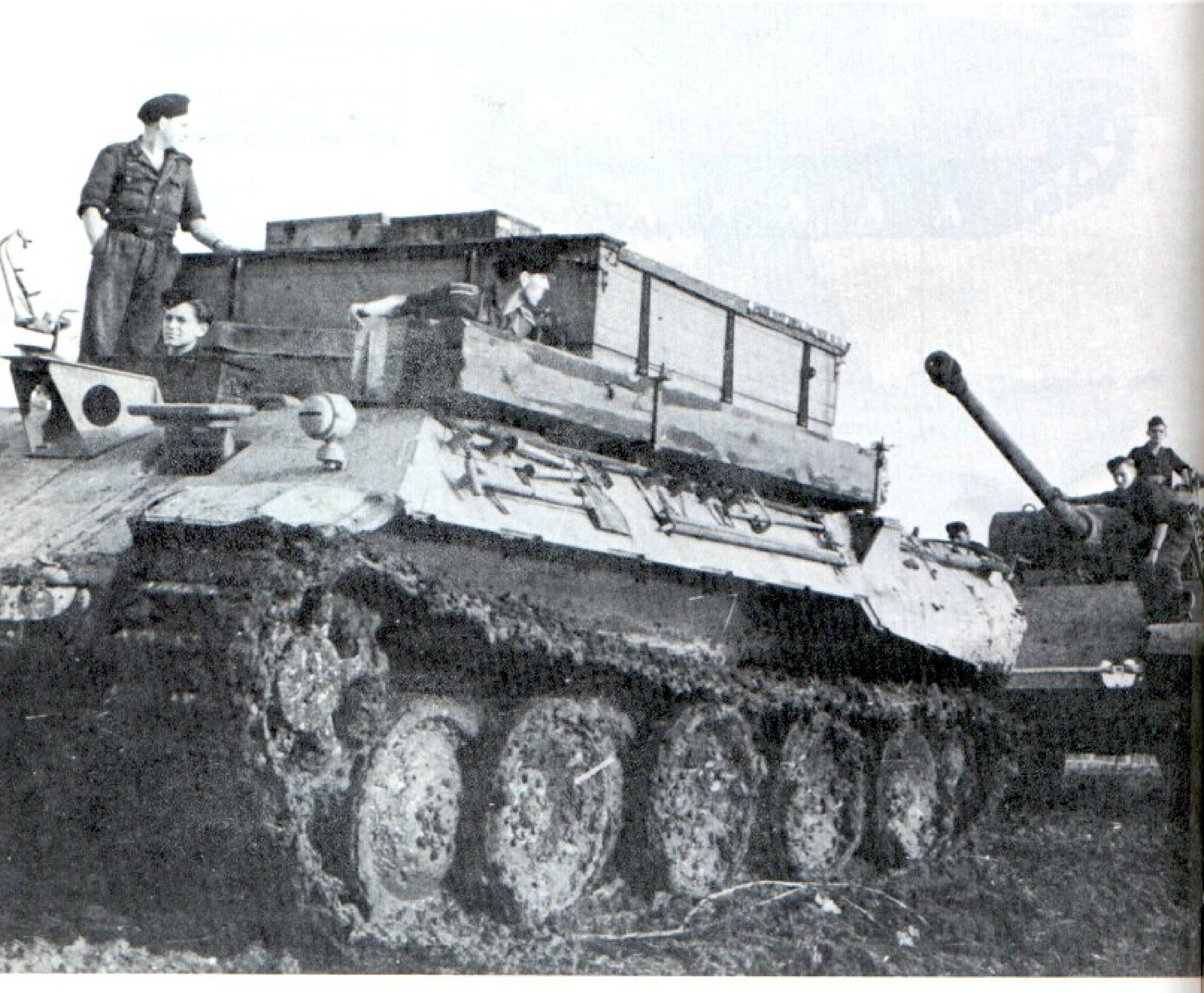


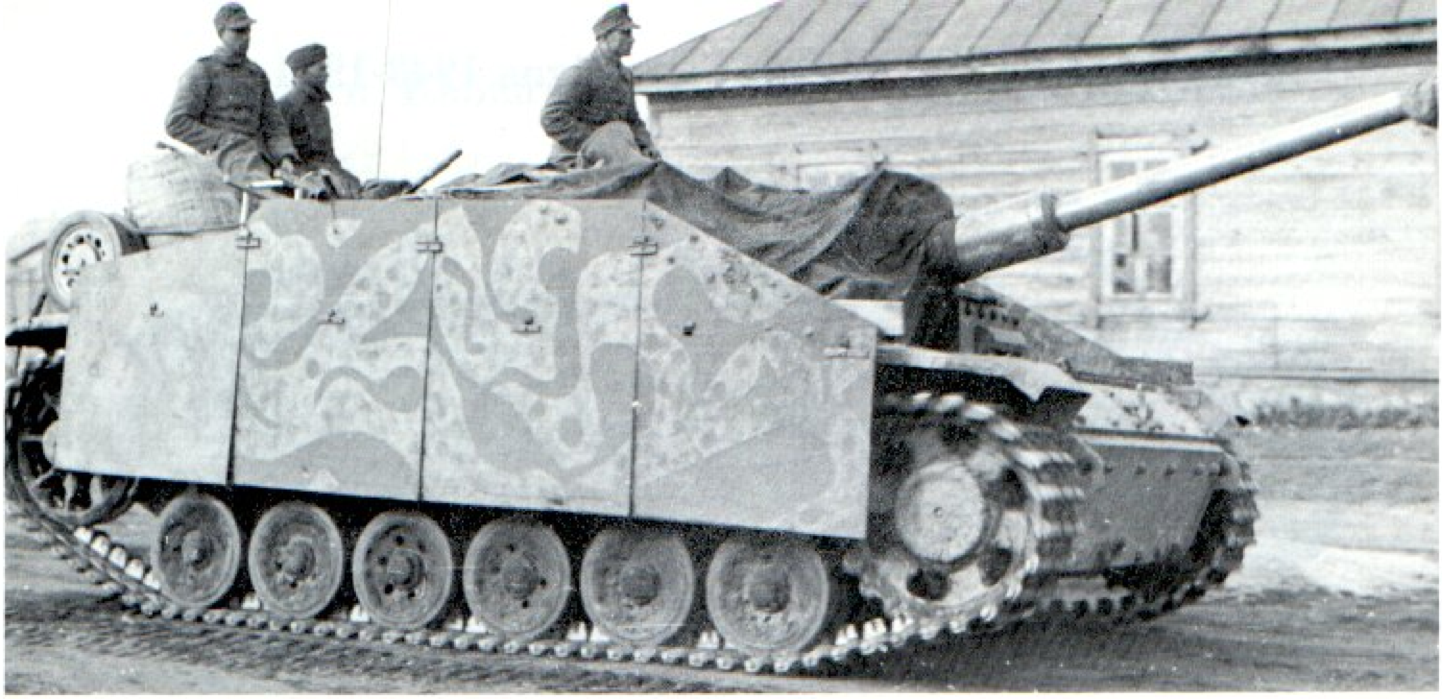
StuG III ausf G,
South Russia 1944
Overall Dark Yellow
with overspray of Red-Brown
outlined in Olive Green



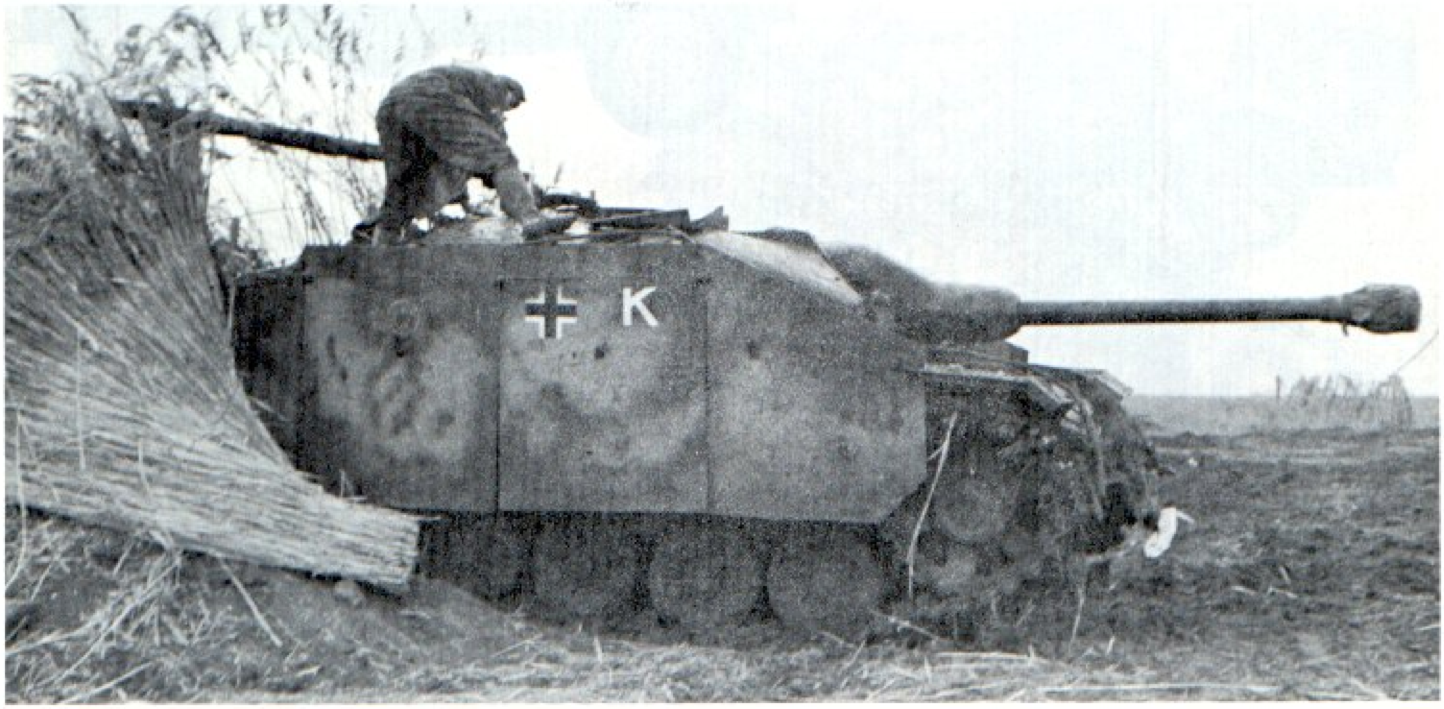
"Erika", a StuG III ausf F, was photographed in Italy, 1943, during training exercises. The dark yellow base coat has brushed on splotches of olive green and red brown which cover the entire vehicle. This color scheme is very effective when the vehicle can be parked in thick underbrush or low trees. [Bundesarchiv]

A Bergepanther recovery vehicle tows a disabled Panther ausf G. Both vehicles are dark yellow. Note the tow hook at the front of the Bergepanther - two vehicles are towing the Panther. An antiaircraft MG mount has been attached to the base for the jib, on the glacis plate. [Bundesarchiv]

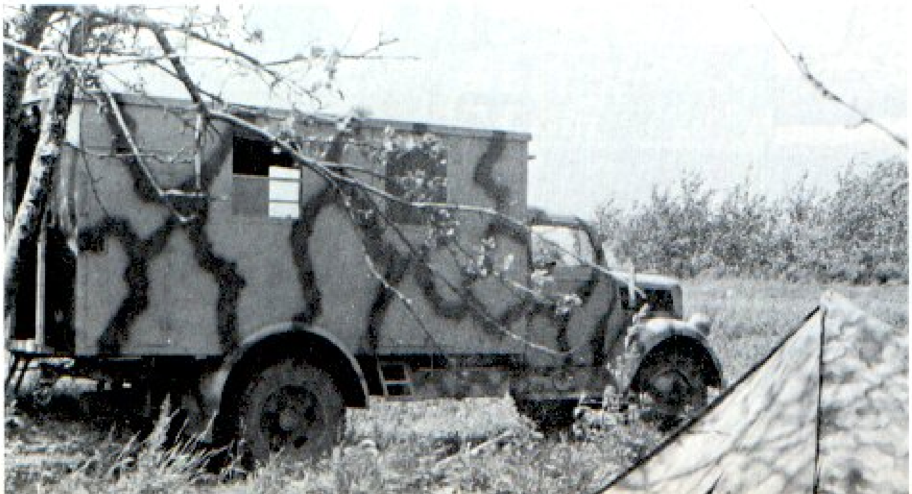




A superb example to prove that almost anything goes, this StuG III ausf G was photographed during the Kursk offensive. Picasso obviously had an admirer in this crew. The patterns are red brown and olive green over dark yellow, the red brown being lighter in this case. [Bundesarchiv]

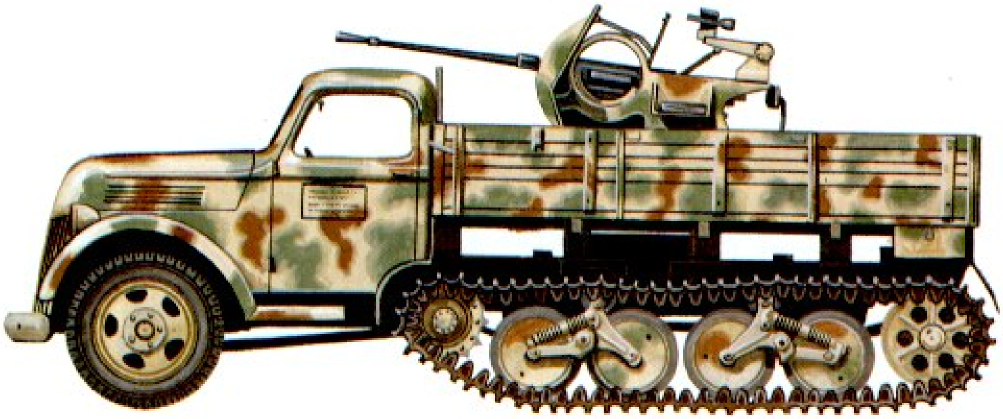


This StuG III ausf G in Russia, 1944, has a scheme of dark yellow with large sprayed areas of red brown. "K" is in white, and the cross is black and white. [Bundesarchiv]

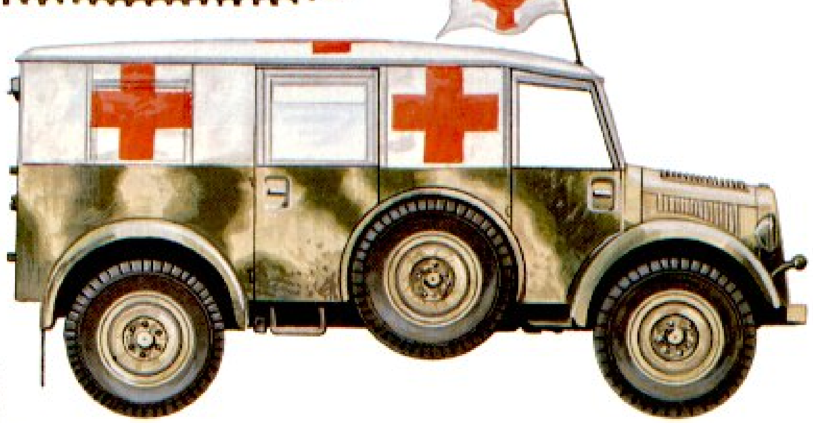


This Opel "Blitz" truck in Italy is dark yellow with red brown lines sprayed all over the sides and top. These van bodies came in dozens of versions and were very common. [Bundesarchiv]

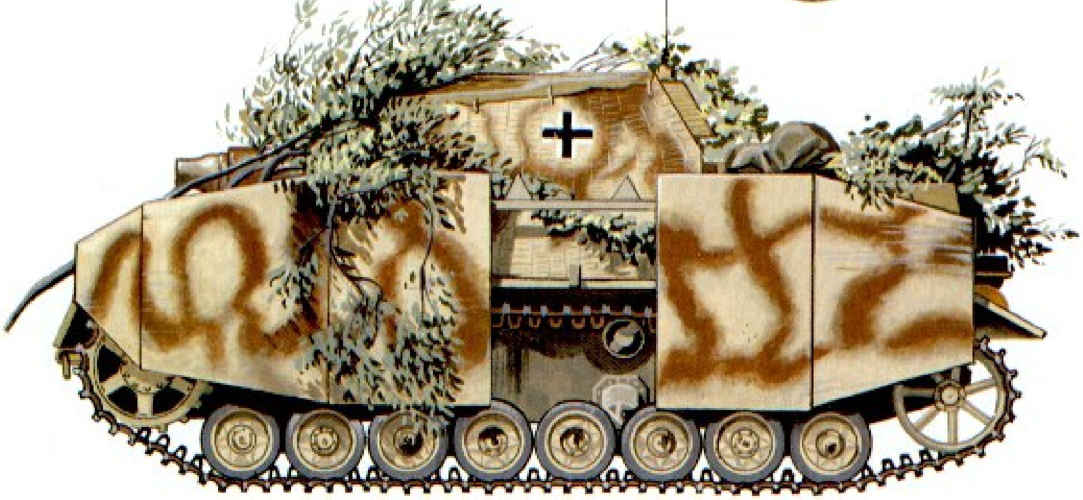
Western and Italian Campaigns 1943-1944



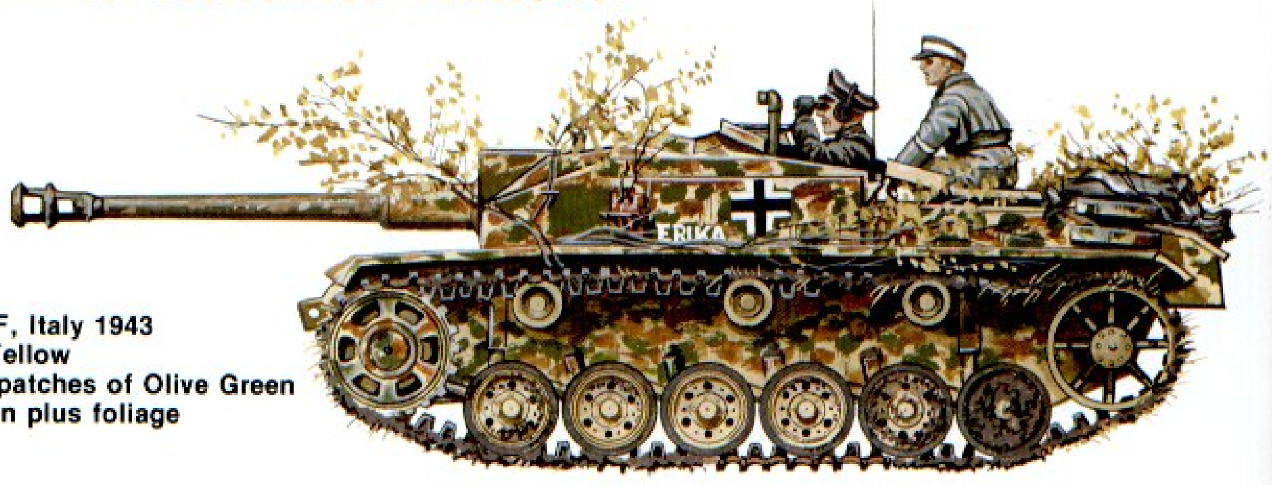
Ford Maultier
with 20mm Flak 38,
France 1944
3 Color scheme



Kfz 31 Horch Ambulance
France 1944
Overall Dark Yellow
with Olive Green overspray
Red Crosses on White background

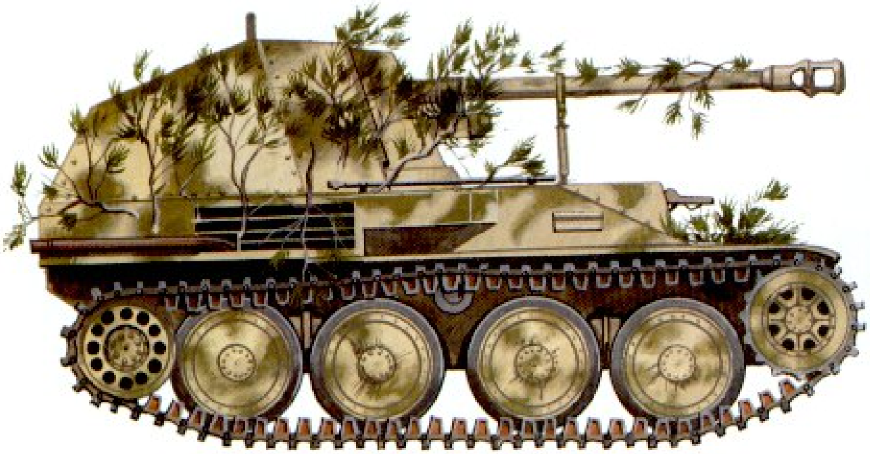


Sturm Panzer 43
Grizzly Bear, Italy 1944
Overall Dark Yellow
with Red-Brown overspray
and Foliage



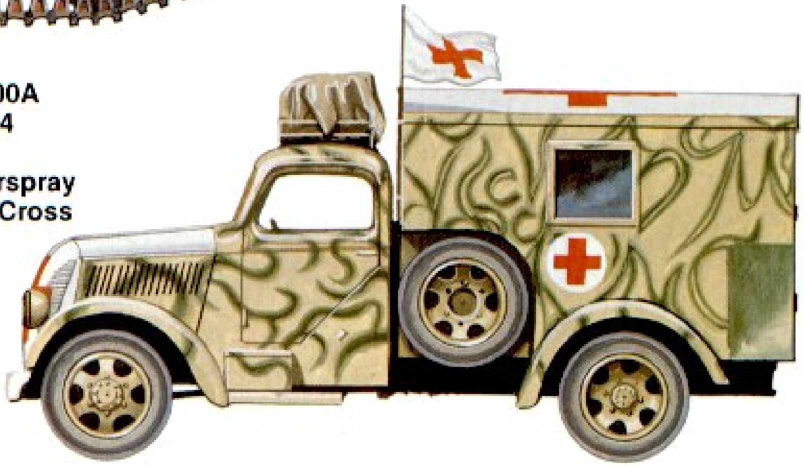
StuG III ausf F, Italy 1943
Overall Dark Yellow
with brushed patches of Olive Green
and Red-Brown plus foliage

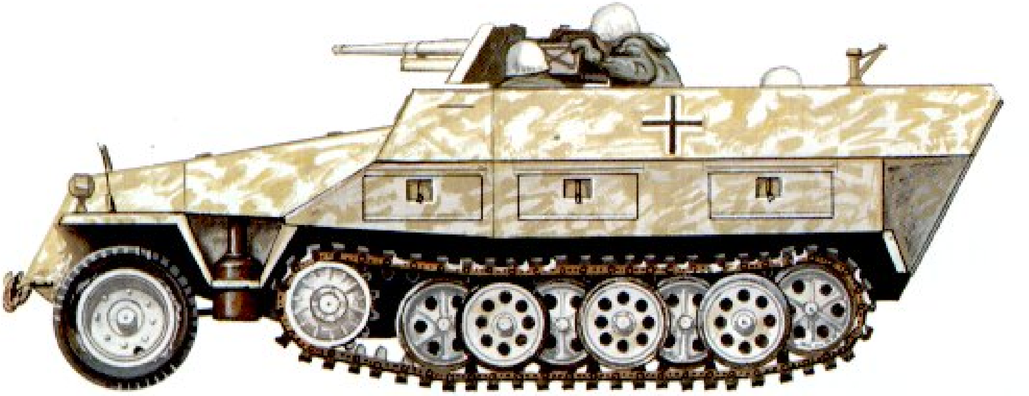
Western, Italian and Russian Campaigns 1943-1944



Marder III ausf M,
France 1944
Overall Dark Yellow
with Olive Green overspray
and pine branches

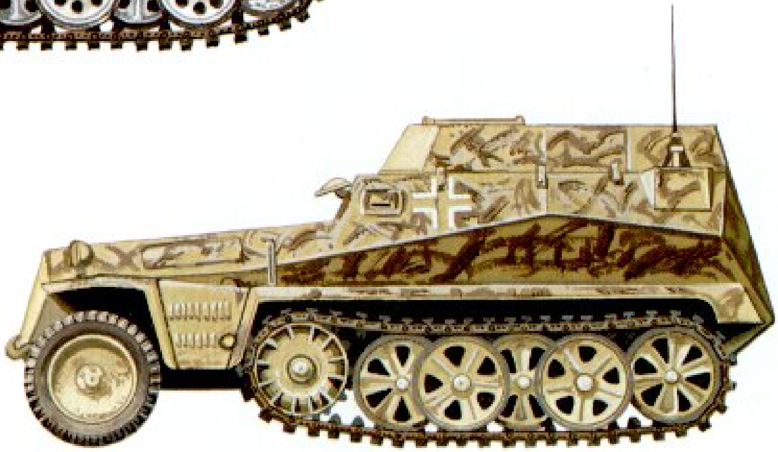
Phanomen Granit 1500A
Ambulance, Italy 1944
Overall Dark Yellow
with Olive Green overspray
White roof with Red Cross

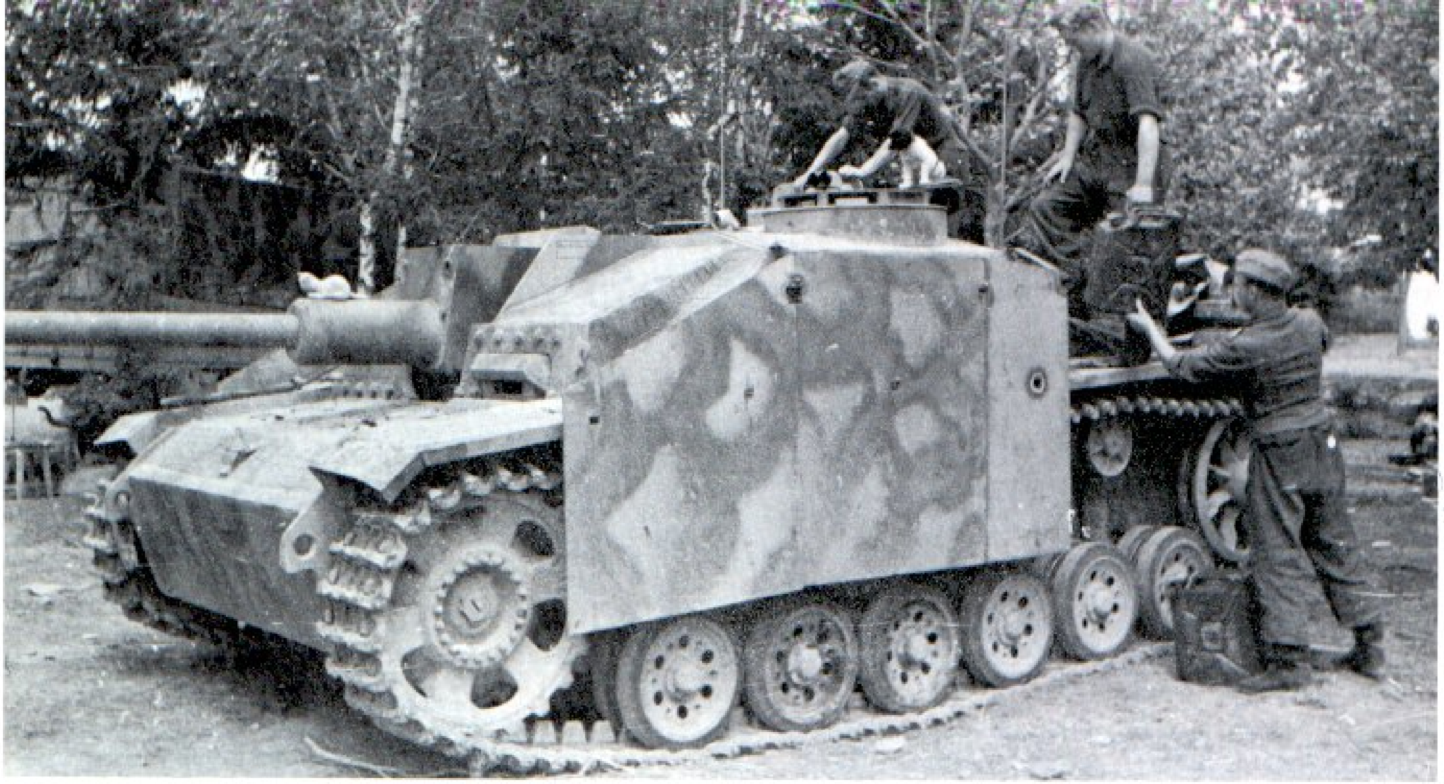


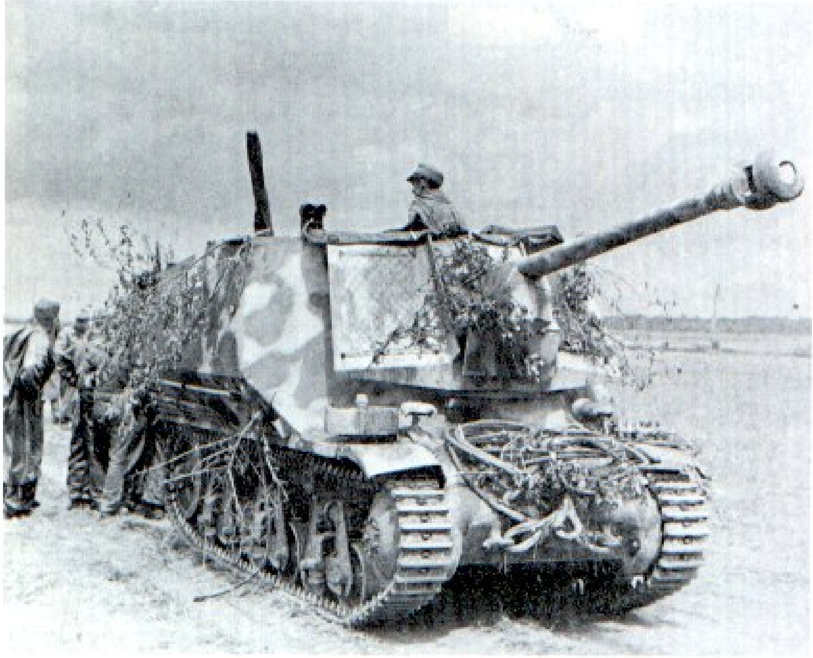


SdKfz 251/10d
with Russian 45mm,
Russia, Winter 1943-44
Overall Dark Yellow
with winter White paint

SdKfz 253, Russia 1943
Overall Dark Yellow
with heavy patches of mud



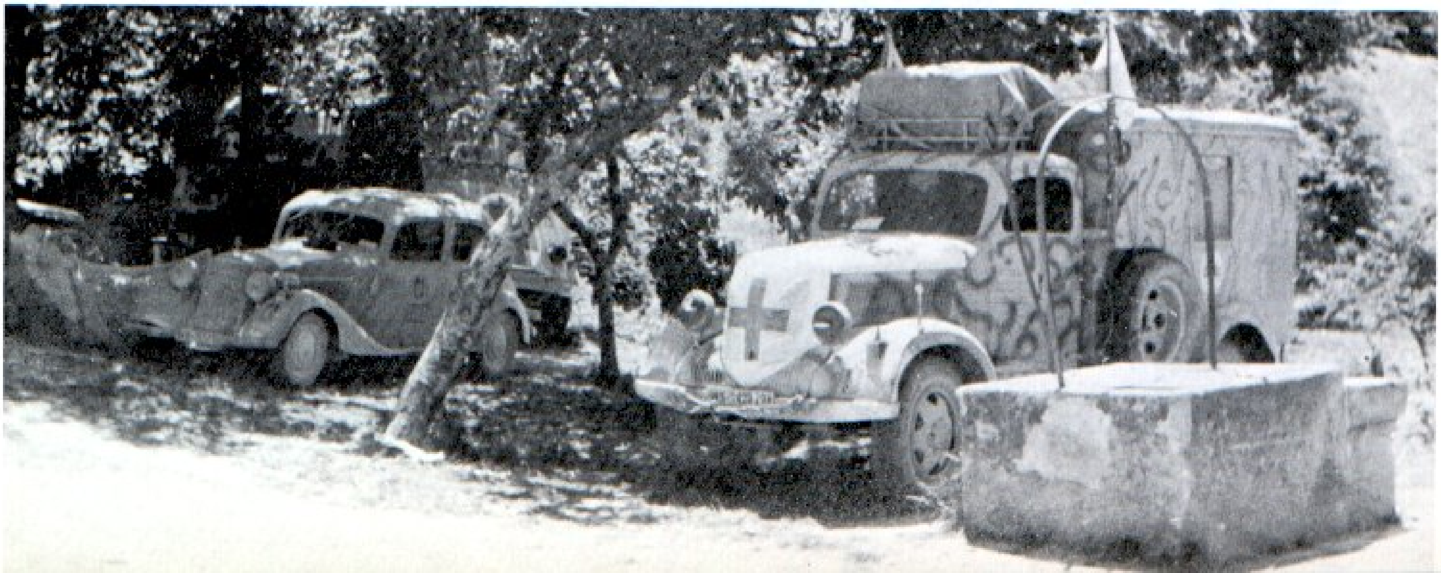


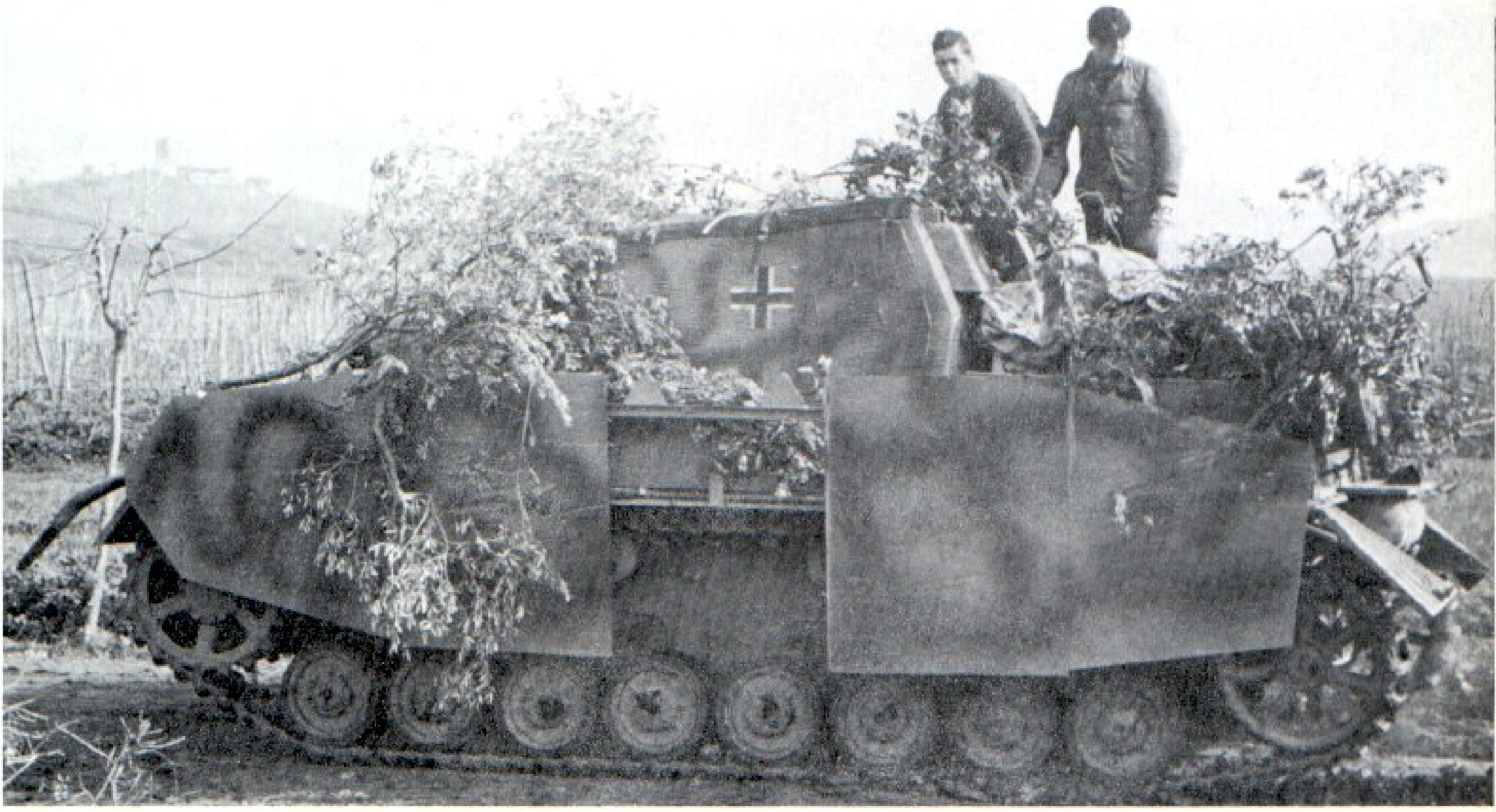


This StuG III ausf G has a scheme found often in southern Russia and Rumania. Base color is dark yellow. Red brown is sprayed in connected patches with olive green outlines. [Bundesarchiv]

A "Marder I", built on a Hotchkiss H35 chassis, has red brown and dark olive green sprayed over dark yellow. Note the use of chain link fencing to attach extra foliage. [Bundesarchiv]

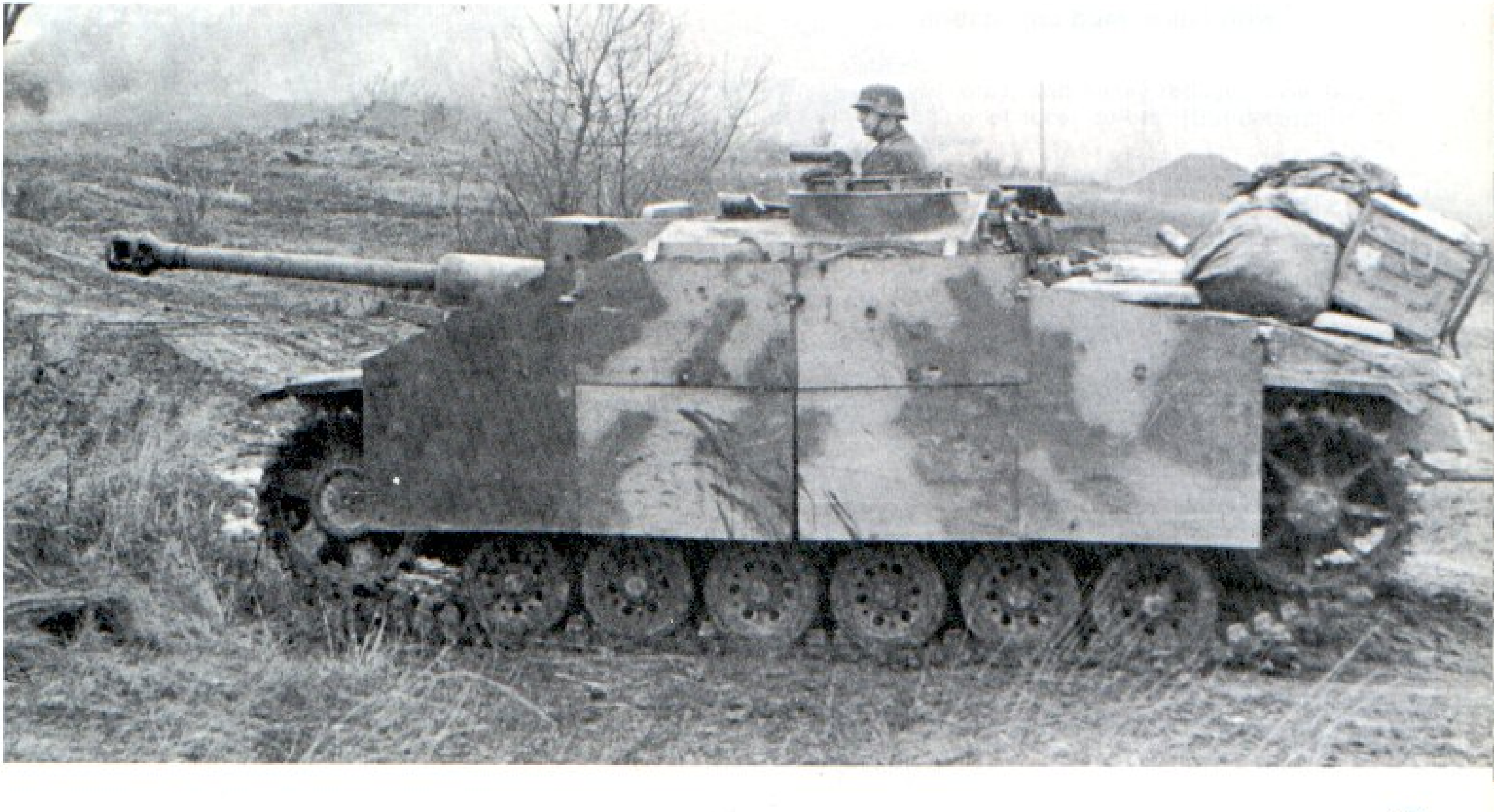
A Mercedes staff car and a Phanomen Granit 1500A ambulance are seen parked in some trees in Italy, 1944. The car is dark yellow; the ambulance is dark yellow with olive green sprayed lines. The radiator grill, engine hood, and body roof are white, with red crosses on the radiator and roof. Usually red crosses in circles were also on each of the back doors. [Bundesarchiv]



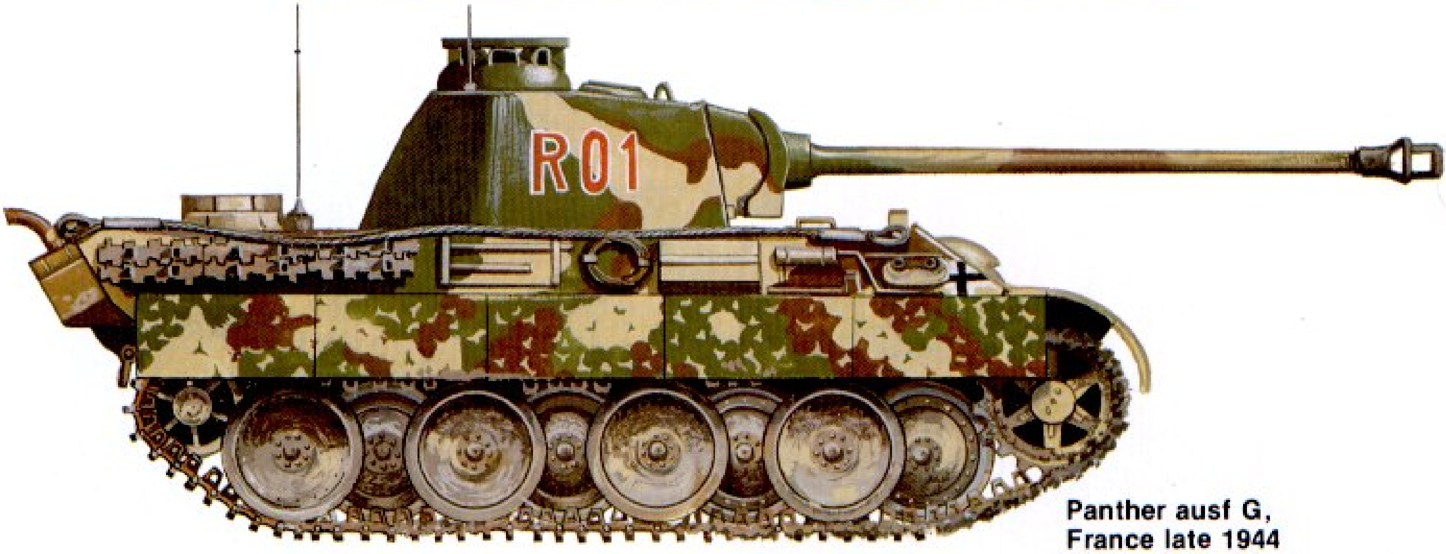


A Sturmpanzer IV "Grizzly Bear" photographed in Italy in 1944. Colors are dark yellow with red brown sprayed lines. Foliage has been piled on top of the front and rear to conceal the square shapes of the superstructure. [Bundesarchiv]

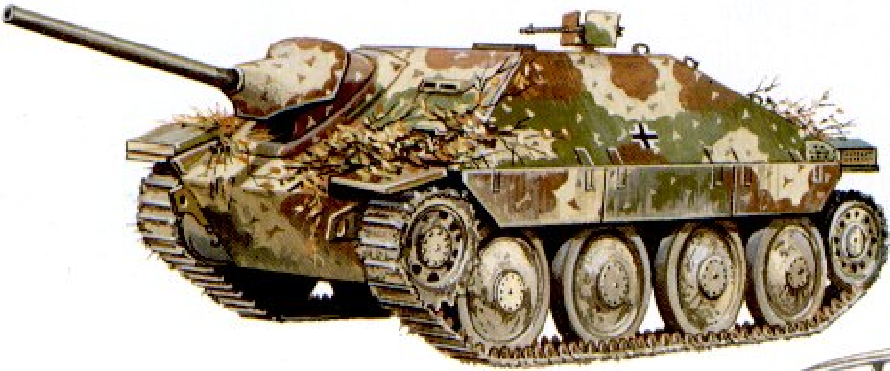
This StuG III ausf G in Russia is painted in a sprayed scheme of red brown over dark yellow. Binocular spotting telescopes protrude from the cupola hatch. The wheels and tracks are covered with mud. Note the sections in the side skirts of this version. [Bundesarchiv]



Western and Eastern Campaigns 1944-1945

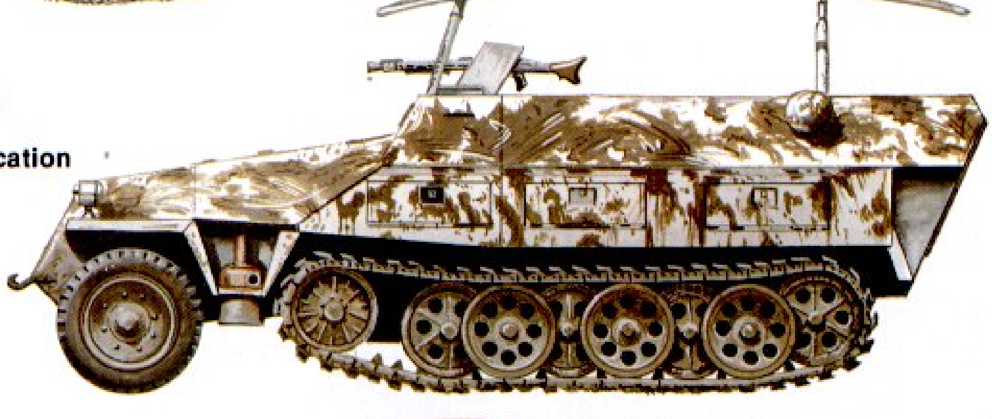


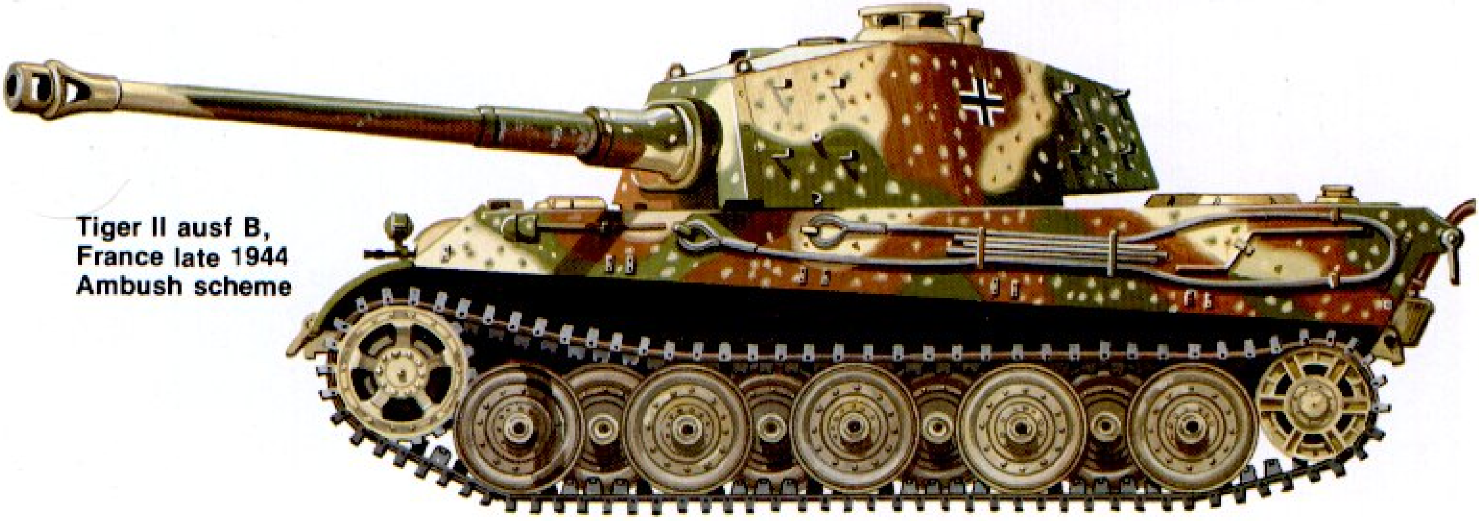
Panther ausf G,
France late 1944
3 Color Scheme
with Ambush Scheme on skirts
mud on lower chassis



Jagdpanzer 38[T] Hetzer,
France 1944
Ambush Scheme

SdKfz 251/3d
Eastern Front 1944-45
Overall White
with heavy mud application





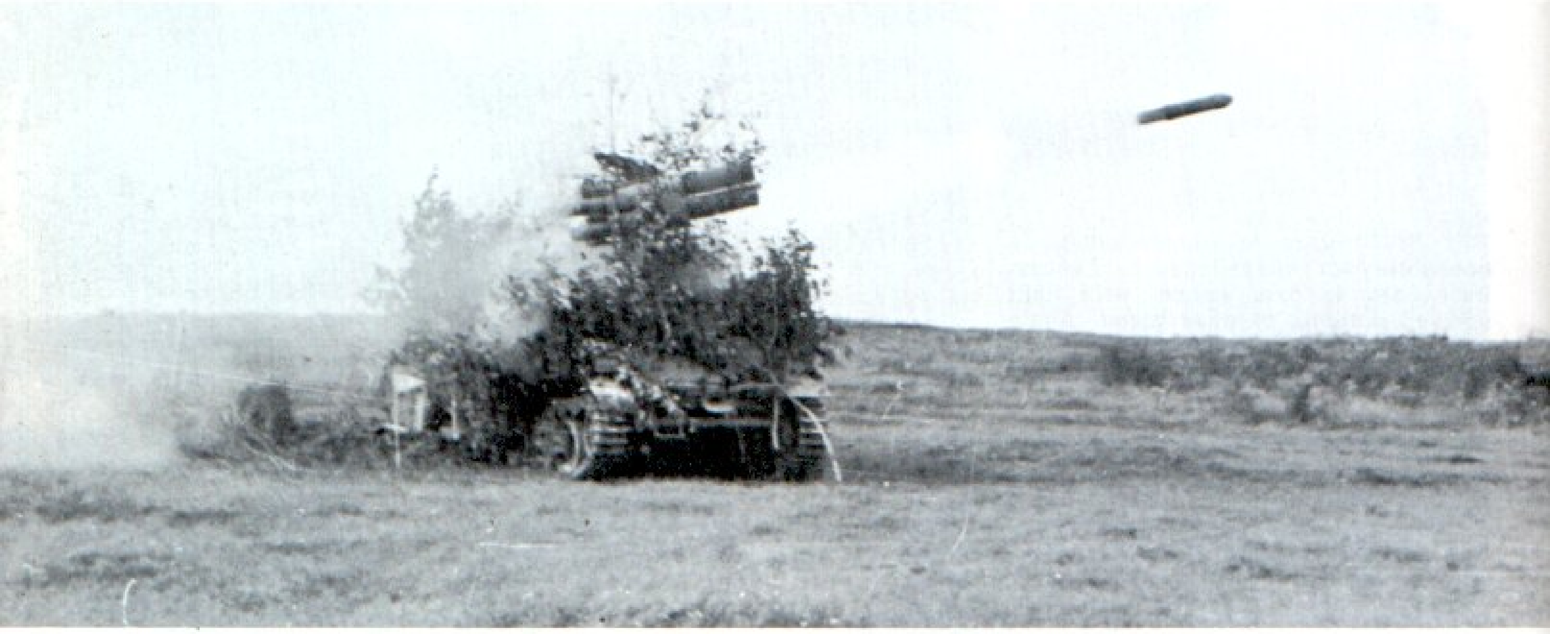
Tiger II ausf B,
France late 1944
Ambush scheme

Foliage as Fixed Camouflage

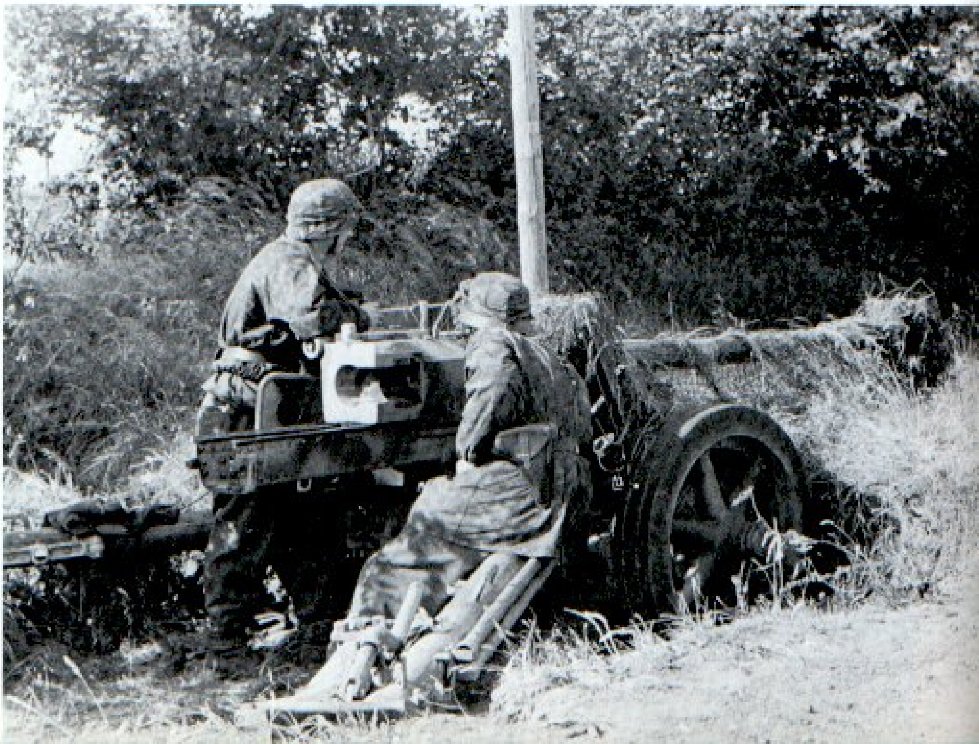
Foliage was used throughout the war to conceal vehicles occupying fixed positions - this was especially true of self-propelled artillery. Self-propelled antitank guns, such as the Rhinoceros and the Marder series, were usually hidden in tree lines or in heavy brush, to fire from ambush - their thin armor made them less useful in open country. These vehicles were usually shielded with tree branches and bundles of foliage piled on top of the vehicles, and often stacked around them to hide the suspension components. Variations in the type and amount of foliage used depended on the terrain and materials at hand, as well as the time available for the job.

Self-propelled artillery, such as the Hummel and Wespe, were often used in open country because of the need for observing fire results, and the generally smaller risk from enemy vehicles. To hide the vehicles, the Germans often placed them near buildings to confuse enemy observers, and in a number of cases, piled huge amounts of tall grass, wheat, and other local foliage all around the vehicles, hiding virtually everything but the gun itself. Again, a selection of photographs show how effective many of these foliage "blinds" were in concealing the vehicle.

Occasionally, very elaborate fixed "blinds" of framework covered with pine boughs or local grass, grain, etc. were constructed for hiding smaller vehicles or pieces of artillery. This was common in wooded areas where such structures couldn't be seen very far. In open country, such "blinds", were usually disguised to resemble haystacks or other structures common to the area. Farm buildings, houses, sheds, and villages were also used to conceal weapons, vehicles, men, etc., often with netting strung over the equipment to prevent detection by reconnaissance planes.

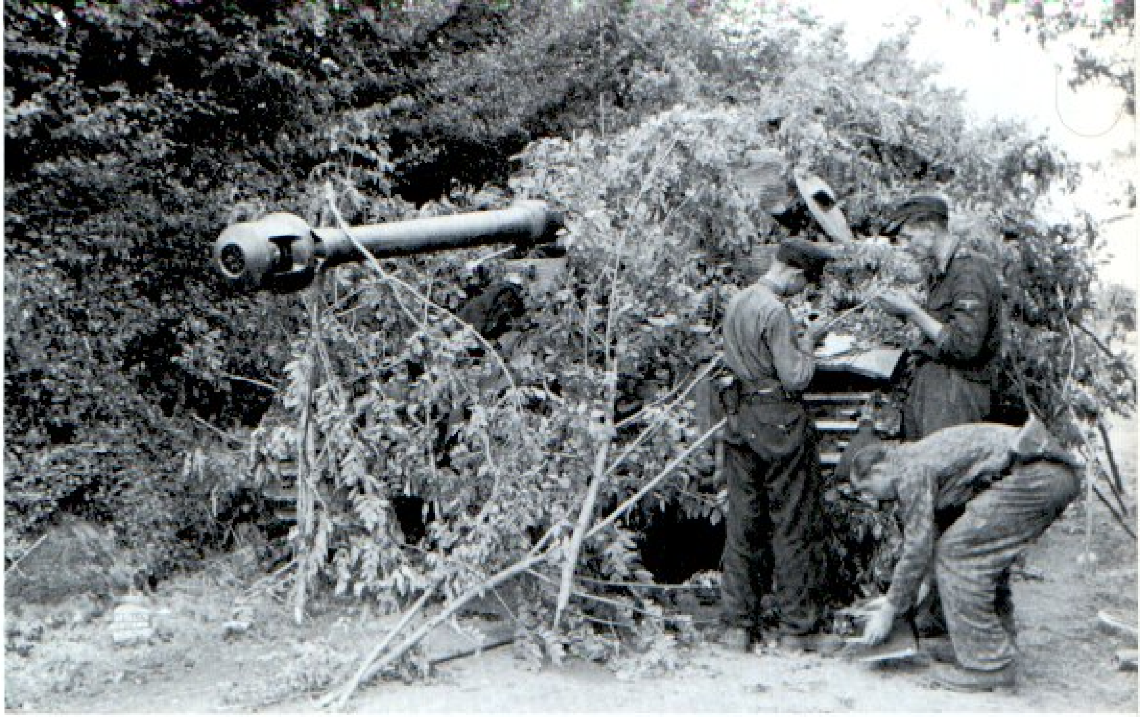


An Opel "Maultier" Panzerwerfer 42 at the moment of firing a 15 cm rocket. Very heavy foliage has been used on and around the vehicle to make it appear to be a small cluster of trees or bushes. The vehicle is dark yellow. [Bundesarchiv]

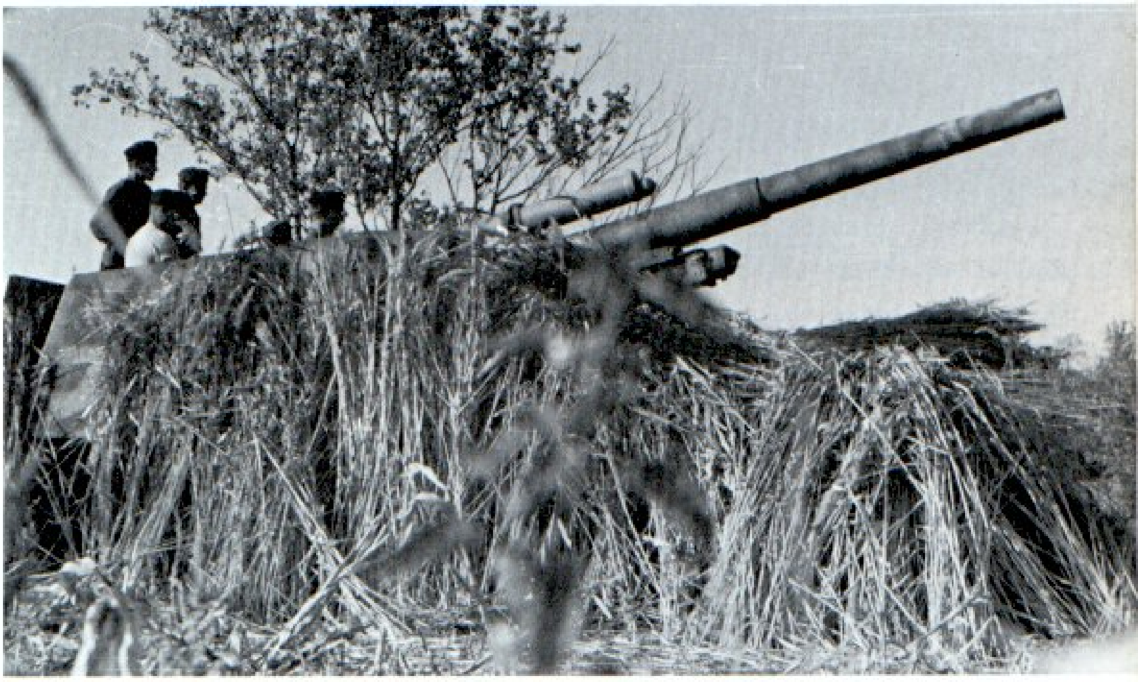


This emplaced 7.5 cm PAK 40 is covered with netting, with grass and straw piled around the barrel and on the front of the shield. The gun is painted dark yellow with olive green overspray. [Bundesarchiv]

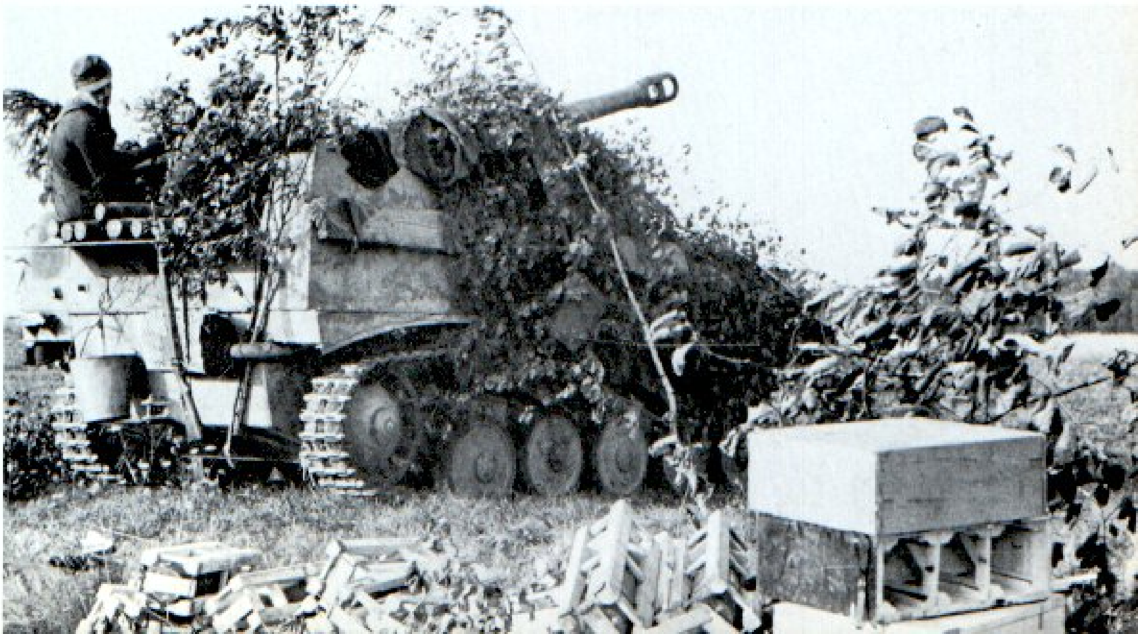
The crew of this Waffen-SS Tiger I ausf E finish piling branches around their tank. Except for the barrel, the whole vehicle is completely covered. Note how conspicuous the long barrel is - this is why many crews took the extra time to cover the gun as well. [Bundesarchiv]

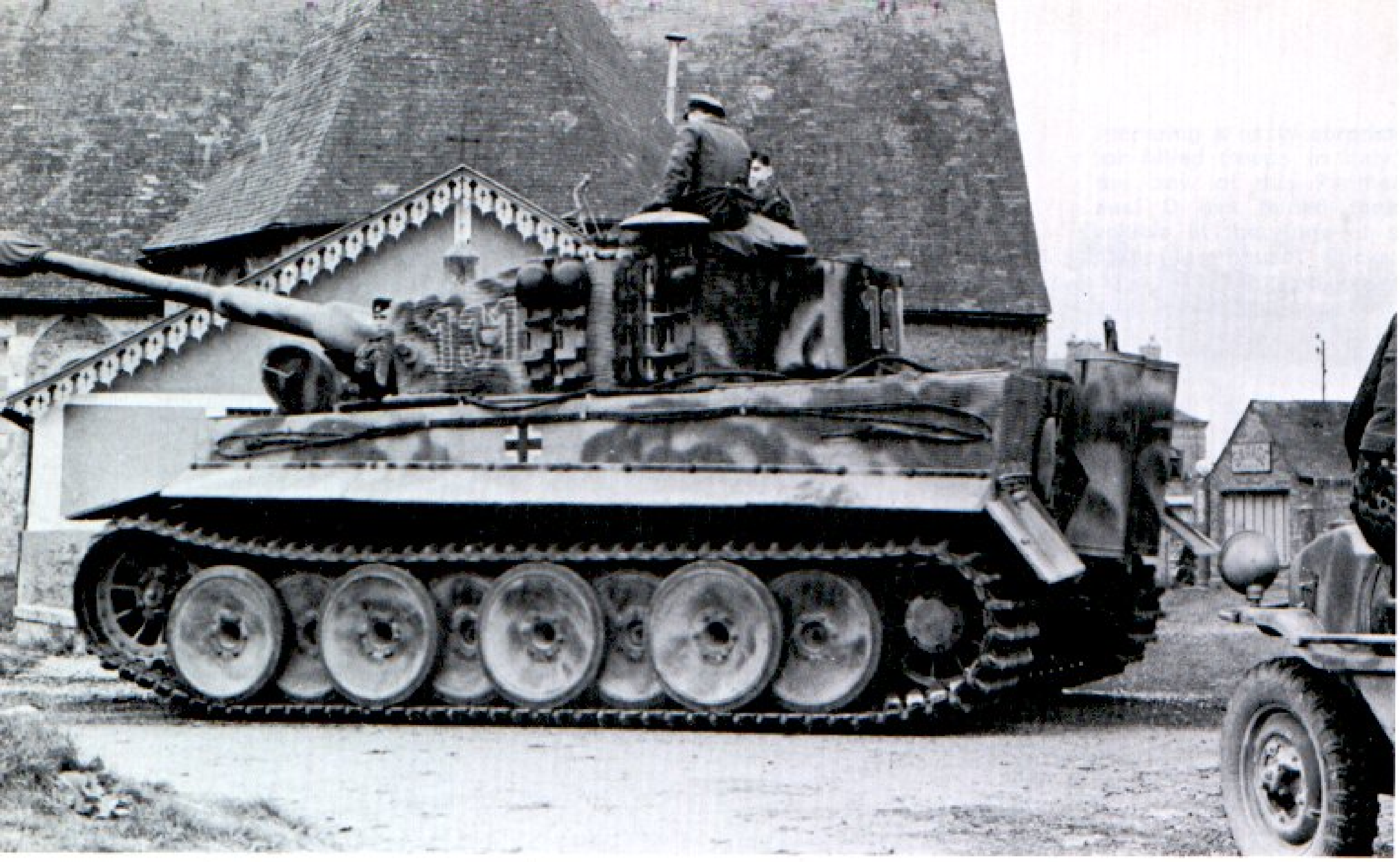


This "Hummel" self-propelled gun in southern Russia has been covered with bundles of straw which hide completely the chassis and lower hull. Again, except for the gun barrel, this vehicle would be difficult to spot. The vehicle colors are olive green over dark yellow. [Bundesarchiv]



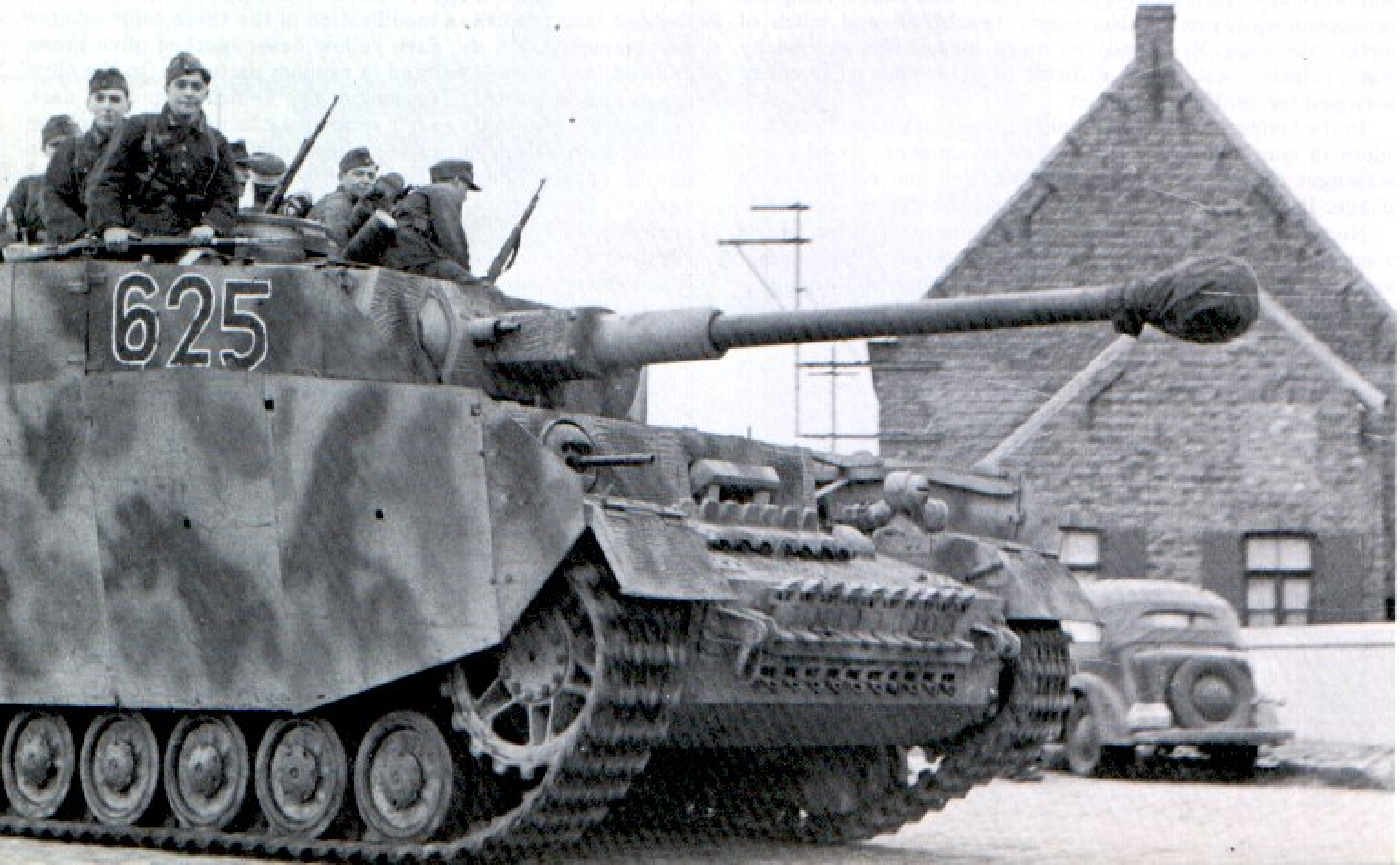
A "Wespe" self-propelled howitzer prepares to fire. Most of the foliage is on the vehicle, and can be moved with it. A few small trees are used to cover the rear plate, but otherwise, branches are used. Note the foliage on the nearby ammunition crates. [Bundesarchiv]

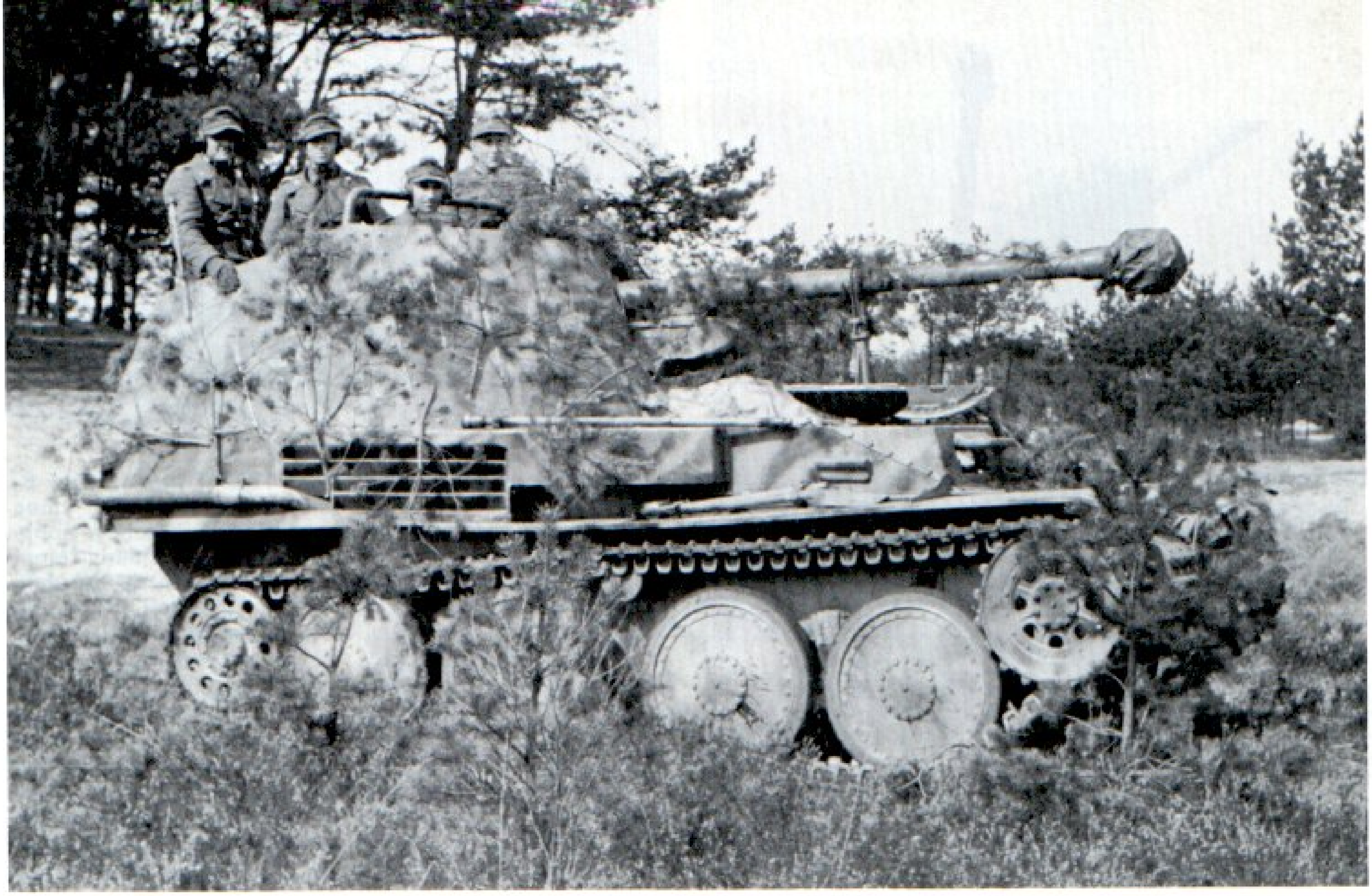




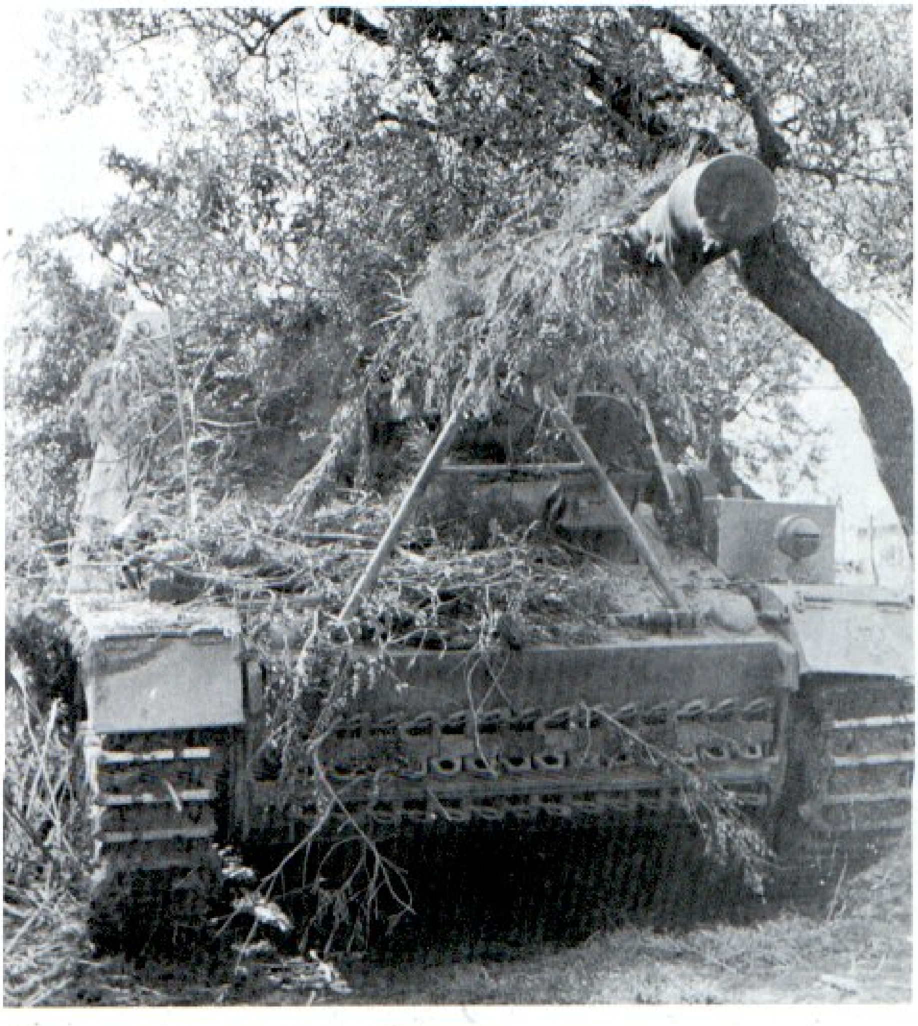
This late production Tiger I ausf E of "LSSAH", seen in France, displays a finish of dark yellow with olive green mottling. Red brown was not as common in the middle of summer, though many vehicles had it left over from previous schemes.

A PzKpfw IV ausf J travelling through a village in France. The vehicle is painted dark yellow with oversprayed patches of olive green and red brown. The numbers are red and white, crudely hand painted. [Bundesarchiv]

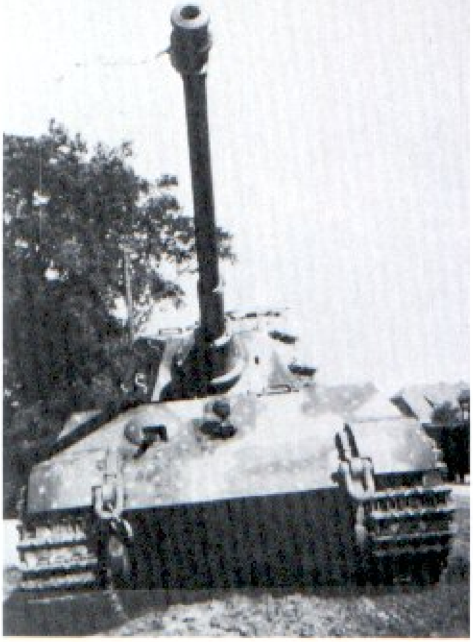


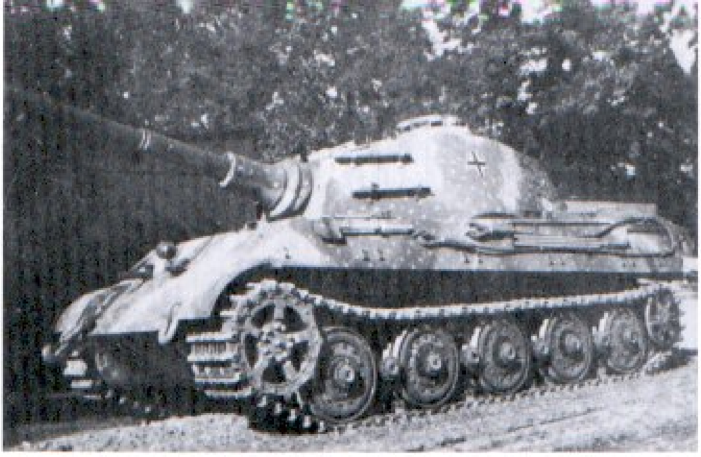


A "Marder III" ausf M with branches from pine trees for extra camouflage. Olive green has been sprayed over the dark yellow. [Bundesarchiv]



A "Hummel" parked in a roadside shelter. Foliage breaks up the vehicles shape and extra branches have been laid around the chassis to hide the wheels. Colors are dark yellow and light sprays of olive green. [Bundesarchiv]





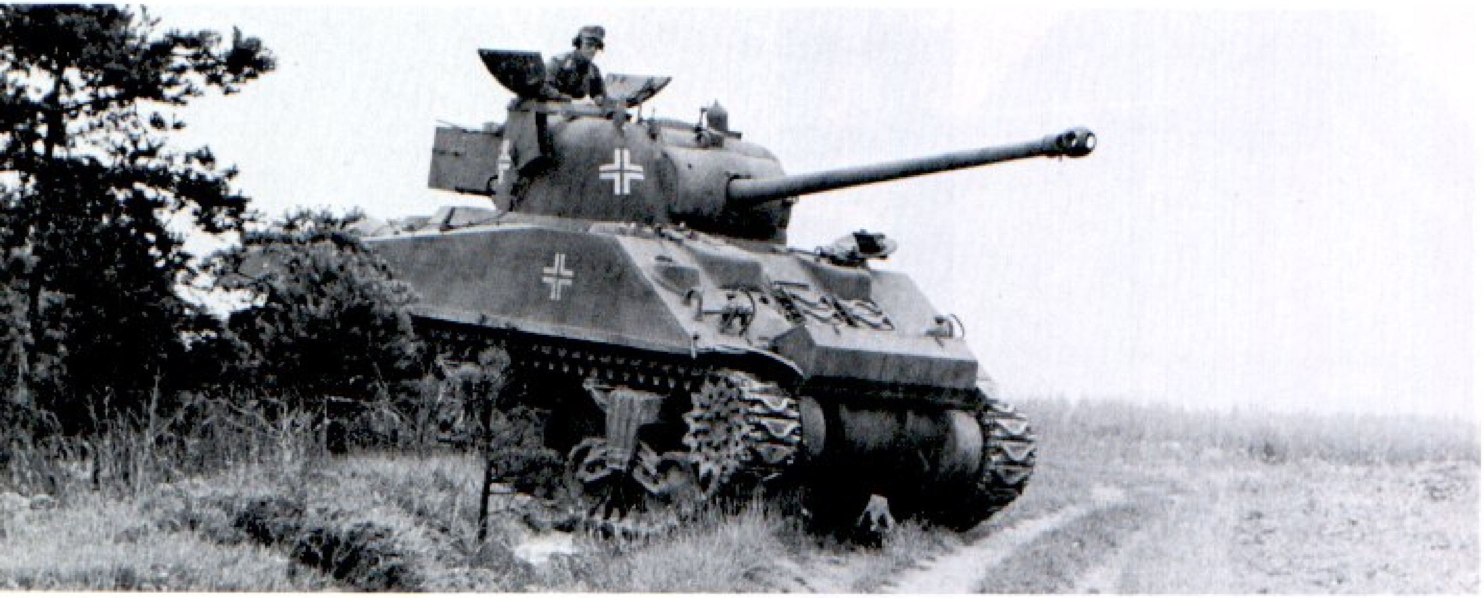
Two different views of a Royal Tiger [Tiger II ausf B] painted in the late war "ambush" scheme. All three colors are used, and the contrasting dark yellow spots on the olive green and red brown show up clearly. Most of the green and red brown spots that are on the dark yellow base have not photographed as well. Note this vehicle has narrow transportation tracks.

The End

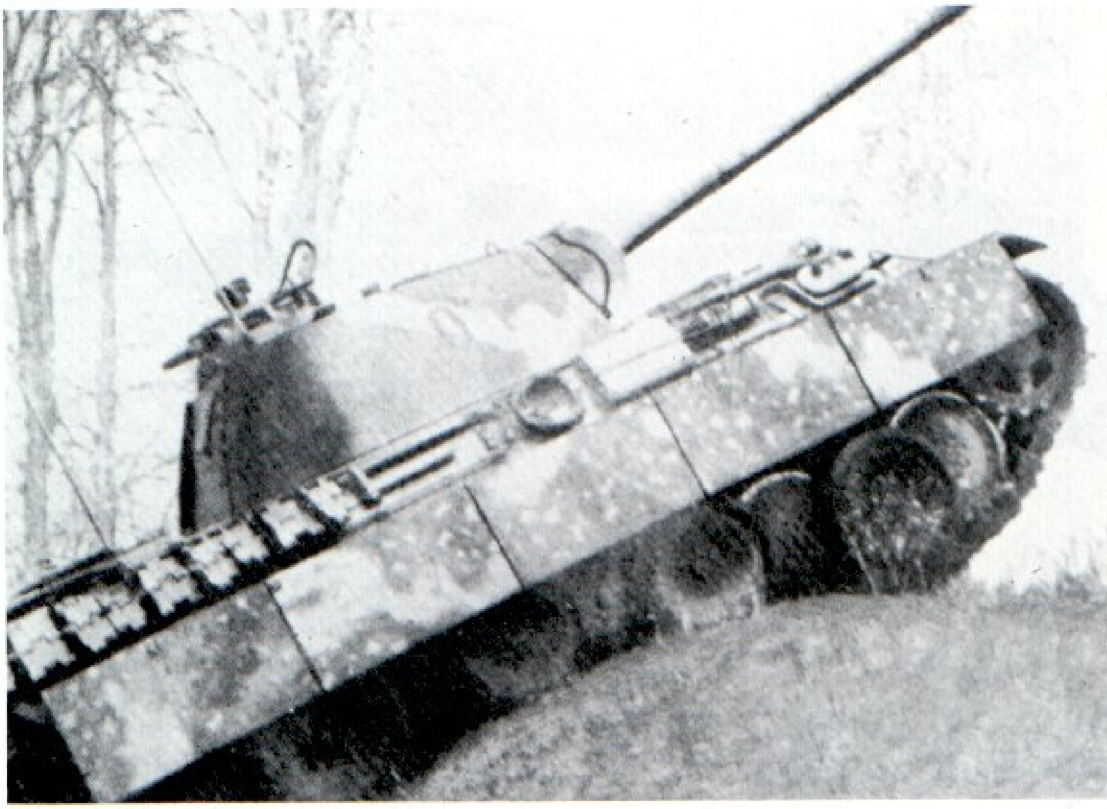
Near the end of 1944, the paint supply situation was critical, and many German vehicles were overall dark yellow. During the Ardennes offensive in December 1944, many German vehicles did not use the white camouflage paste, even though fair amounts of this were available. The elite units, mainly SS and Tiger II detachments employed sprayed camouflage schemes, often with very similar styles and patterns of application - these were probably the result of unit orders to achieve "standard" camouflage schemes. A number of German vehicles did employ snow camouflage, but this was not nearly universal. Snow camouflage was widely used on the Russian front, however.

The end of winter in early 1945 brought the final offensive drives into Germany from the Rhine river on the west and Russia in the east. By this time, shortages of all materials were so critical that almost all new vehicles left the factories in the base color dark yellow and never received any further treatment other than covering with foliage. Most of the Panzer Divisions were paper formations, with perhaps a dozen or so tanks comprising the real armor establishment. In these conditions, elaborate camouflage was a waste of time, as the equipment usually lasted only a few weeks. Older vehicles and guns did retain whatever paint schemes they had last received, but few, if any, attempts were made to alter the finish. Use of the zimmerit paste had been largely discontinued by the end of 1944, and was rarely seen on vehicles produced in 1945. Some large vehicles, especially the Jagdtiger and Tiger II, were painted in overall early war dark gray. It cannot be determined if this was a deliberate attempt to conceal these vehicles in shadows, as was the case in 1939, or whether the dark gray paint was all that was available - left over from the early 1943 change to dark yellow base color.

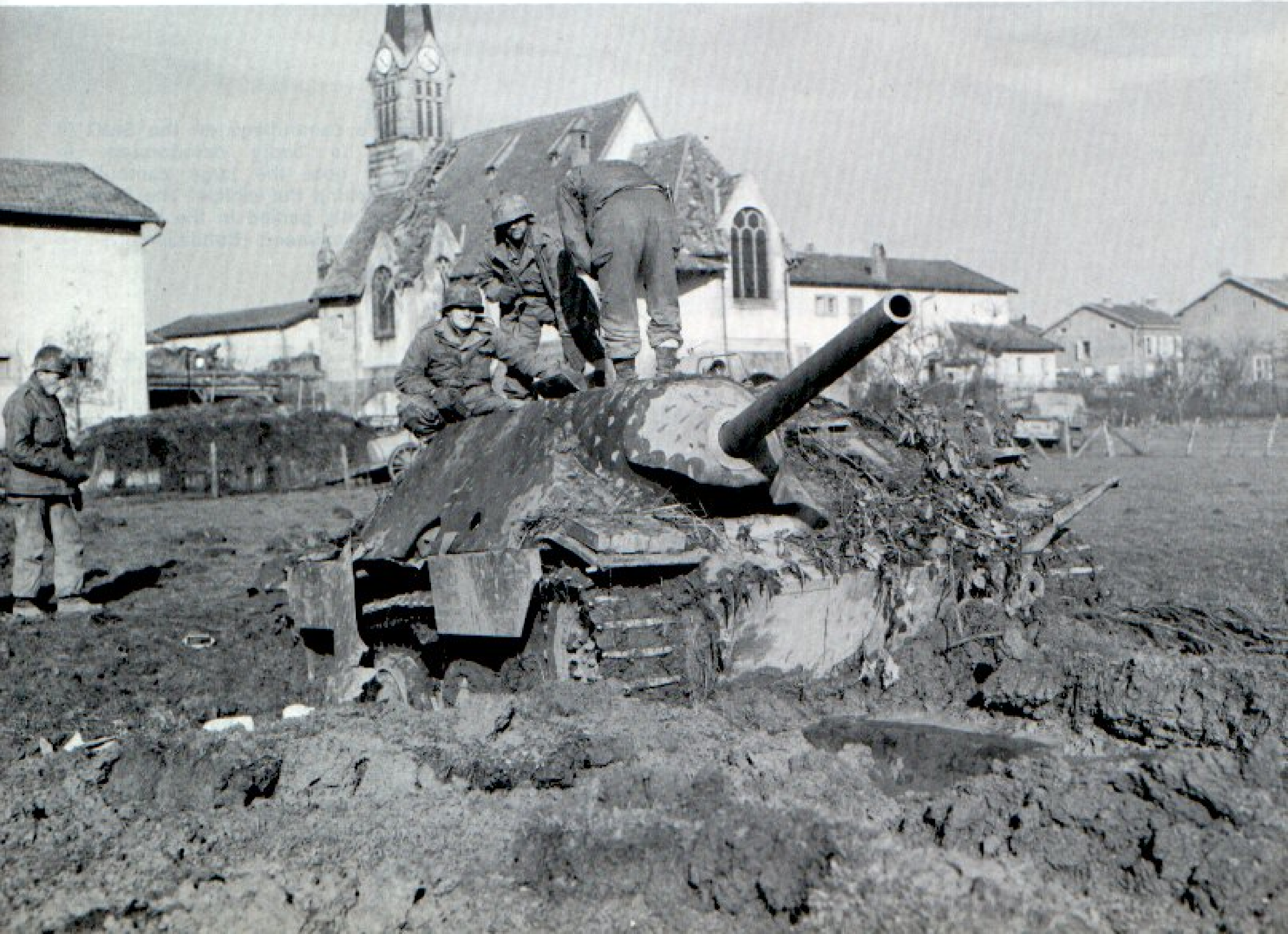
This Sherman VC "Firefly", with a 17 pdr. gun, was captured and used by German troops. The tank retains most of its original British khaki color, but dark green has been sprayed over it in random wavy lines. Outline crosses in white are stencilled on the hull and turret. [Bundesarchiv]

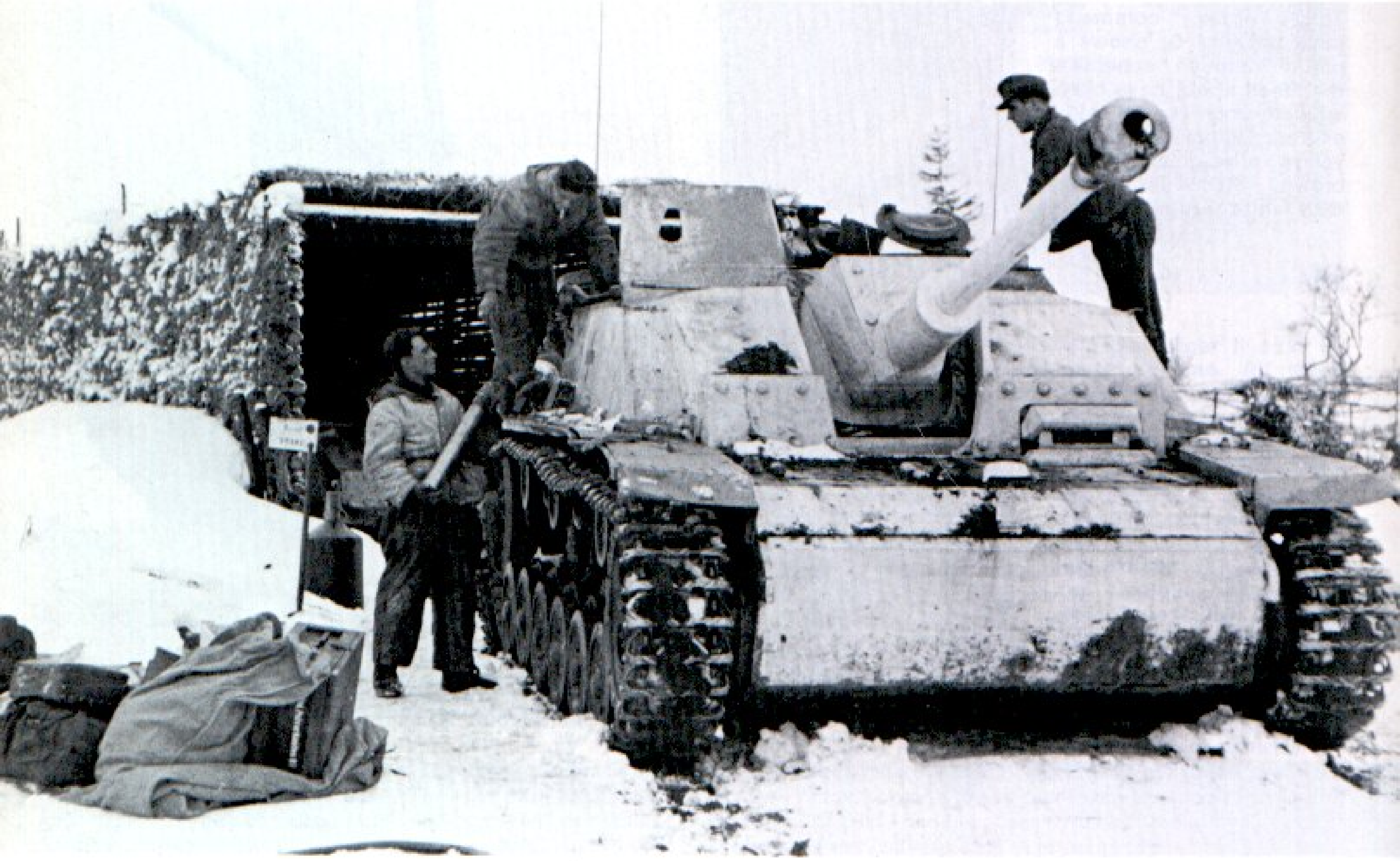


This Panther command tank, an ausf G, shows a partial "ambush" scheme - the small spots have been applied only to the side skirts. Colors are dark yellow, olive green and red brown. "RO1" is in red with white outlines.

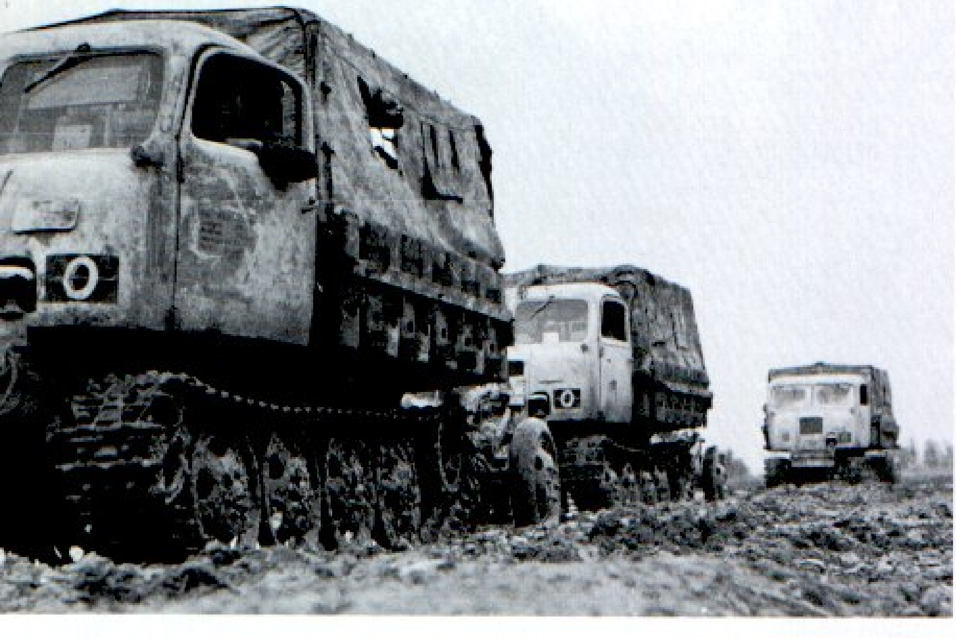


This Hetzer was destroyed by an American M10 near Halloville, France, November 1944. The vehicle has been hand-painted, not sprayed. All three colors are used. This tank destroyer was caught in an open field, and as a result was sighted and hit.



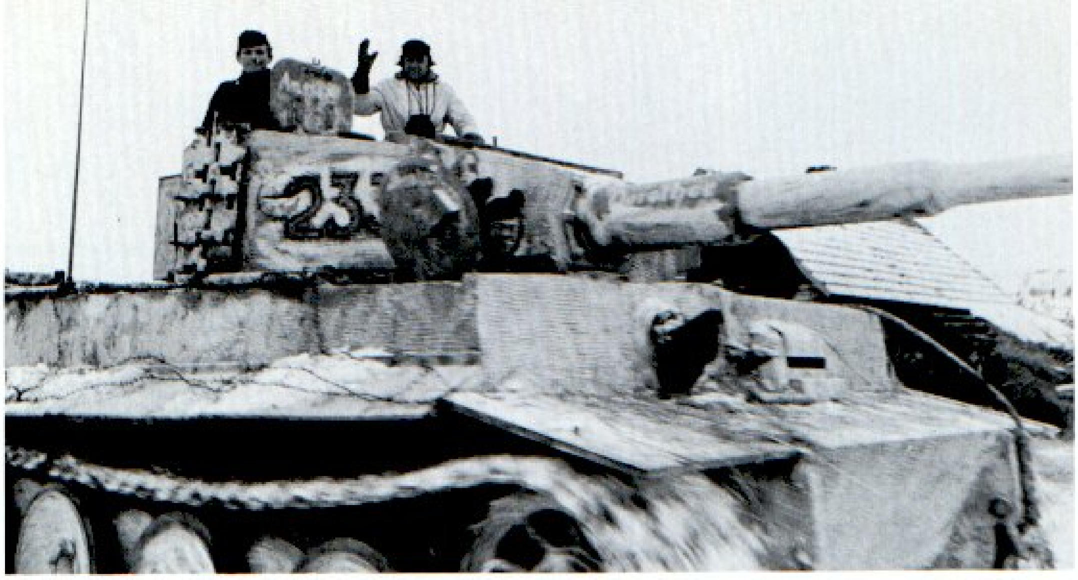


The white camouflage on the StuG III ausf G is badly deteriorated. In particular note the large camouflage "blind" behind the vehicle. The StuG III was normally parked in the "blind" for better concealment. [Bundesarchiv]

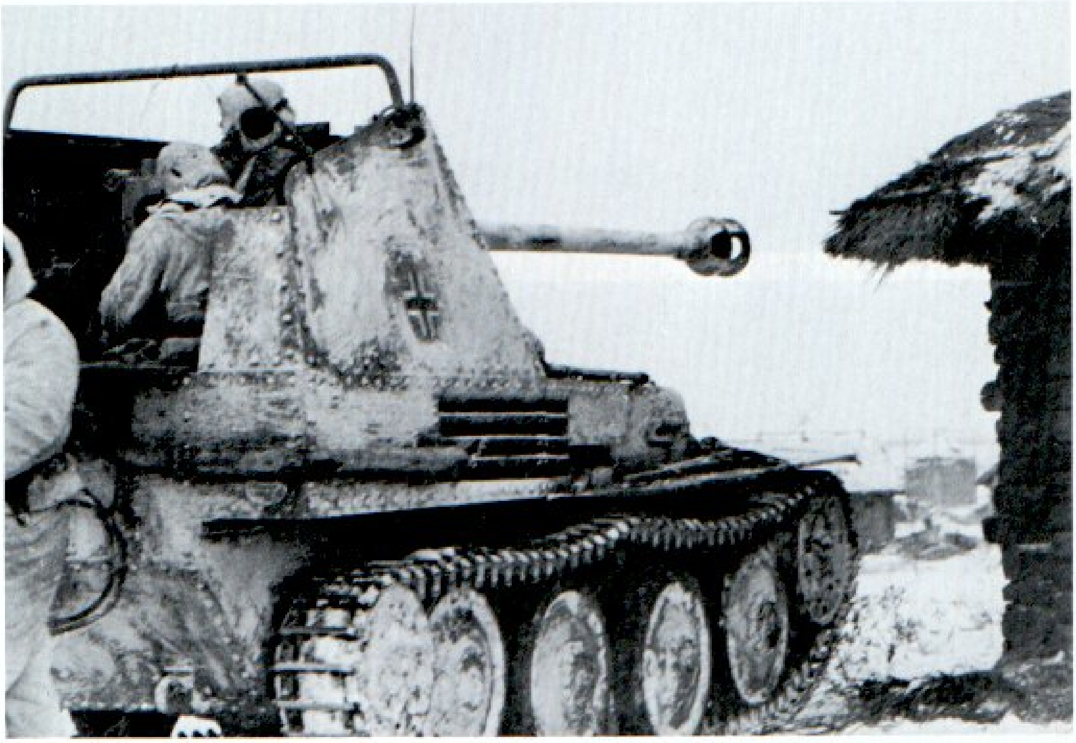


These Steyr Raupenschlepper Ost [RSO] trucks move through thick mud. Their white camouflage paint is wearing off. Many crews didn't remove the paint, but just stopped touching up the defects, and let it wear off gradually. [Bundesarchiv]

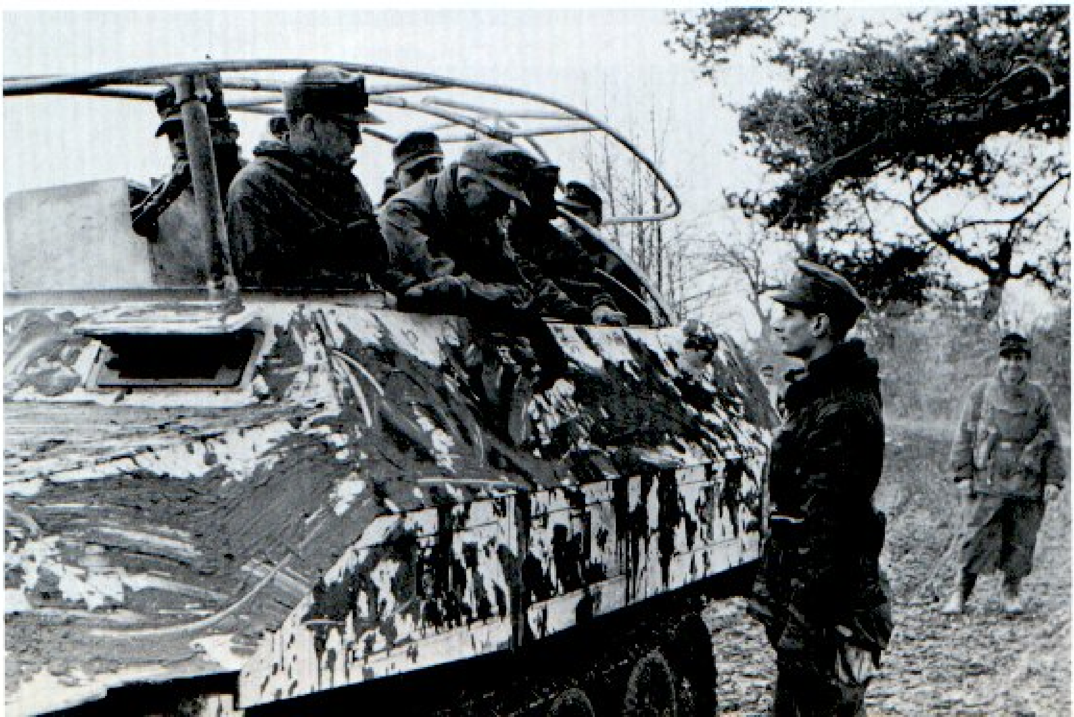
"Dorothee", a mid-production Tiger I ausf E, shows a scruffy solid coat of white winter paint. The side cross has been painted over, but the names and numbers have been left intact. The turret numbers are yellow with black outlines. [Bundesarchiv]

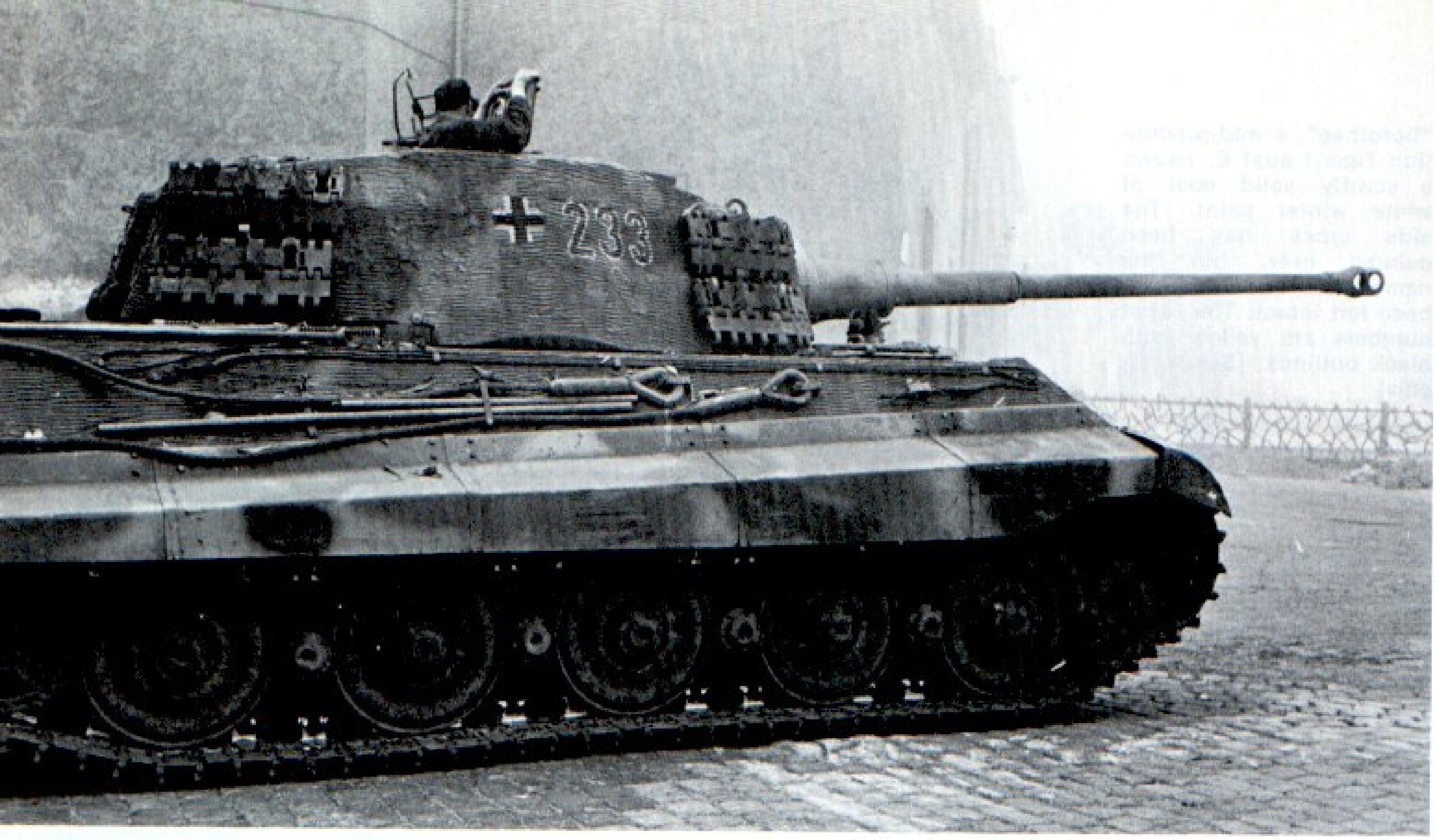


This "Marder III" ausf M has an uneven smeared coat of white paint. The white has been applied to the whole exterior including the wheels and the gun. Interiors were not usually painted white in winter. [Bundesarchiv]

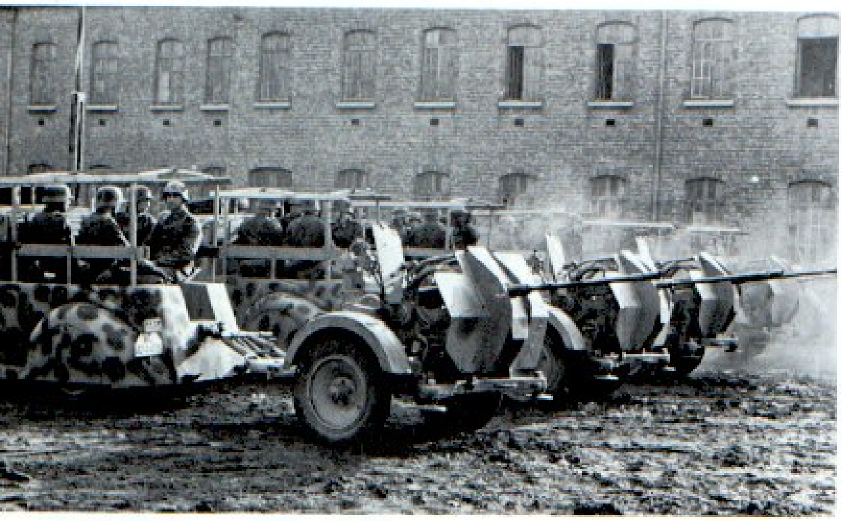


When you're in a hurry...to cover the solid white snow camouflage, this crewman has just smeared a quick coat of wet mud over the entire upper body of this SdKfz 251/3 ausf D. Notice the frame antenna taken from a SdKfz 232 [8 rad] armored radio car. [Bundesarchiv]

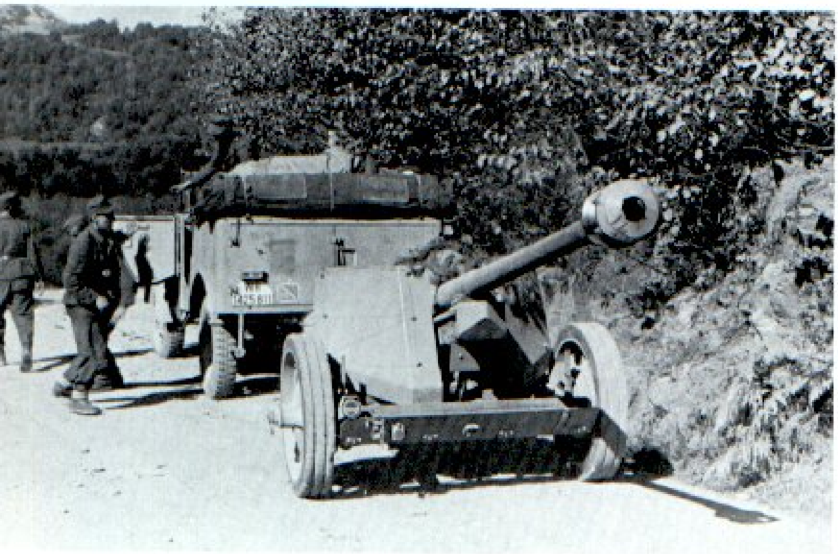




Ironically, as Germany's final collapse was imminent, some vehicles received very careful, elaborate color schemes. This Royal Tiger seen in Budapest, 1945, took part in the last great offensive mount by the Germans. The dark yellow base is oversprayed with olive green and red brown. [Bundesarchiv]



Civilian automobiles were converted into gun tractors for light guns and flak. These converted cars, with 2 cm Flak 38's, are dark yellow with green mottling. [Bundesarchiv]

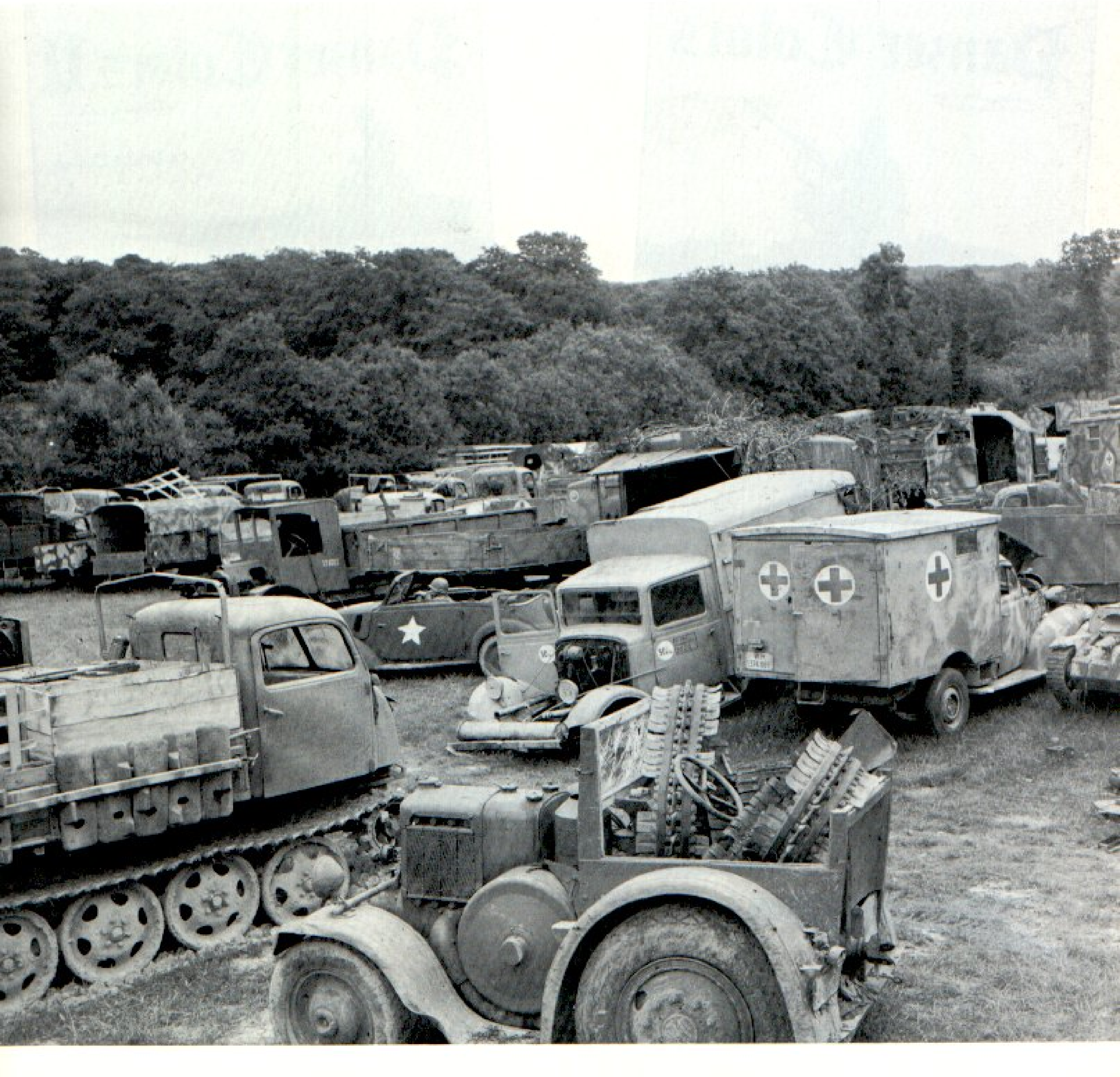


This PAK 40, normally towed by a 3-ton-rated halftrack, is being pulled by a Steyr 1500A 4x4 truck. The vehicle and gun are overall dark yellow.

The End

By the last months of the war, even civilian and rear echelon vehicles required camouflage and often foliage, as Allied fighter bombers roamed across Germany, attacking any vehicles in sight - even farmer's wagons weren't safe. In May, 1945, the need for frantic expedient measures for camouflage was over - on May 8, Admiral Karl Doenitz surrendered to the Allies. For Germany, the war was over.

The vehicles in this abandoned German vehicle dump display considerable variety in patterns and colors. German, French and Italian-made vehicles are all found in this group. The ambulance in the right center of the picture has been converted by cutting off the rear body of an ordinary sedan and adding a box body for an ambulance. One small car, still running, has been marked with a very crude white U.S. star.



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